SCAG®
POWER EQUIPMENT

OPERATOR'S MANUAL

MODEL STT

THIS MANUAL CONTAINS THE OPERATING INSTRUCTIONS AND SAFETY INFORMATION FOR YOUR SCAG MOWER. READING THIS MANUAL CAN PROVIDE YOU WITH ASSISTANCE IN MAINTENANCE AND ADJUSTMENT PROCEDURES TO KEEP YOUR MOWER PERFORMING TO MAXIMUM EFFICIENCY. THE SPECIFIC MODELS THAT THIS BOOK COVERS ARE CONTAINED ON THE INSIDE COVER. BEFORE OPERATING YOUR MACHINE, PLEASE READ ALL THE INFORMATION ENCLOSED.

PART NUMBER 03120

WARNING:

FAILURE TO FOLLOW SAFE OPERATING PRACTICES MAY RESULT IN SERIOUS INJURY.

* Keep all shields in place, especially the grass discharge chute.
* Before performing any maintenance or service, stop the machine and remove the spark plug wire and ignition key.
* If a mechanism becomes clogged, stop the engine before cleaning.
* Keep hands, feet and clothing away from power-driven parts.
* Read this manual completely as well as other manuals that came with your mower.
* Keep others off the tractor (only one person at a time)

REMEMBER - YOUR MOWER IS ONLY AS SAFE AS THE OPERATOR!

Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the equipment.

This manual covers the operating instructions and illustrated parts list for:

STT52A-23KA	**with a serial number of 8480001 to 8489999**
STT52A-25CH	**with a serial number of 8490001 to 8499999**
STT52A-27CH	**with a serial number of 8720001 to 8729999**
STT61A-23KA	**with a serial number of 8500001 to 8509999**
STT61A-25CH	**with a serial number of 8510001 to 8519999**
STT61A-27KA	**with a serial number of 8520001 to 8529999**
STT61A-27CH	**with a serial number of 8730001 to 8739999**
STT61A-29KA-DFI	**with a serial number of 8530001 to 8539999**
STT72A-27KA	**with a serial number of 8540001 to 8549999**
STT72A-29KA-DFI	**with a serial number of 8550001 to 8559999**
SMT-52A	**with a serial number of 8560001 to 8569999**
SMT-61A	**with a serial number of 8570001 to 8579999**
SMST-72A	**with a serial number of 8610001 to 8619999**

Always use the entire serial number listed on the serial number tag when referring to this product.

SCAG POWER EQUIPMENT

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GENERAL INFORMATION

1.1 INTRODUCTION

Your mower was built to the highest standards in the industry. However, the prolonged life and maximum efficiency of your mower depends on you following the operating, maintenance and adjustment instructions in this manual.

If additional information or service is needed, contact your Scag Power Equipment Dealer.

We encourage you to contact your dealer for repairs. All Scag dealers are informed of the latest methods to service this equipment and provide prompt and efficient service in the field or at their service shop. They carry a full line of Scag service parts.

USE OF OTHER THAN ORIGINAL SCAG REPLACEMENT PARTS WILL VOID THE WARRANTY.

When ordering parts, always give the model and serial number of your tractor. The serial number plate is located where shown in Figure 1-1.

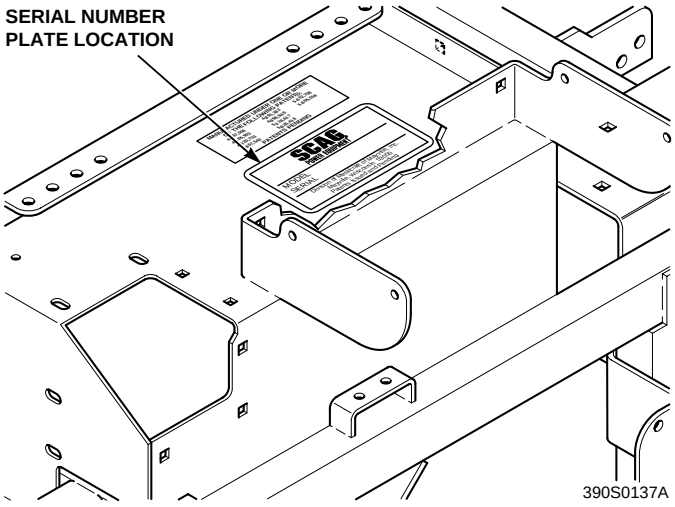


Figure 1-1 Tractor Serial Number Plate Location

For pictorial clarity, some illustrations and figures in this manual may show shields, guards or plates open or removed. Under no circumstances should your mower be operated without these devices in place.

All information is based upon product information available at the time of approval for printing. Scag Power Equipment reserves the right to make changes at any time without notice and without incurring any obligation.

1.2 DIRECTION REFERENCE

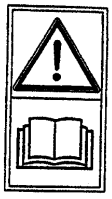
The “Right” and “Left”, “Front” and “Rear” of the machine are referenced from the operator’s right and left when seated in the normal operating position and facing the forward travel direction.

1.3 SERVICING THE ENGINE AND DRIVE TRAIN COMPONENTS

The detail servicing and repair of the engine, hydraulic pumps and gearboxes are not covered in this manual; only routine maintenance and general service instructions are provided. For service of these components during the limited warranty period, it is important to contact your Scag dealer or find a local authorized servicing agent of the component manufacturer. Any unauthorized work done on these components during the warranty period may void your warranty.

ISO Symbols CE Mark

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Choke		Transmission
	Parking Brake		Spinning Blade
	On/Start		Spring Tension on Idler
	Off/Stop		Oil
	Falling Hazard		

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Fast		Slow
	Continuously Variable - Linear		Cutting Element - Basic symbol
	Pinch Point		Cutting Element - Engage
	Hourmeter/Elapsed Operating Hours		Cutting Element - Disengage
	Thown Object Hazard Keep Bystanders Away		Read Operator's Manual

SAFETY INFORMATION

2.1 INTRODUCTION

Your mower is only as safe as the operator. Carelessness or operator error may result in serious bodily injury or death. Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of the personnel involved in the operation, transport, maintenance and storage of the equipment. Make sure every operator is properly trained and thoroughly familiar with all of the controls before operating the mower.

READ THIS OPERATOR'S MANUAL BEFORE ATTEMPTING TO START YOUR MOWER.

A replacement manual is available from your authorized Scag Service Dealer or by contacting Scag Power Equipment, Service Department at P.O. Box 152, Mayville, WI 53050 or contact us via the Internet at www.scag.com. Use the contact form to make your request. Please indicate the complete model and serial number of your Scag product when requesting replacement manuals.

2.2 SIGNAL WORDS

This symbol means **"Attention! Become Alert! Your Safety is Involved!"** The symbol is used with the following signal words to attract your attention to safety messages found on the decals on the machine and throughout this manual. The message that follows the symbol contains important information about safety. To avoid injury and possible death, carefully read the message! Be sure to fully understand the causes of possible injury or death.

Signal Word:

It is a distinctive word found on the safety decals on the machine and throughout this manual that alerts the viewer to the existence and relative degree of the hazard.

⚠ DANGER:

The signal word "DANGER" denotes that an extremely hazardous situation exists on or near the machine that could result in high probability of death or irrepairable injury if proper precautions are not taken.

⚠ WARNING:

The signal word "WARNING" denotes that a hazard exists on or near the machine that can result in injury or death if proper precautions are not taken.

⚠ CAUTION:

The signal word "CAUTION" is a reminder of safety practices on or near the machine that could result in personal injury if proper precautions are not taken.

Your safety and the safety of others depends significantly upon your knowledge and understanding of all correct operating practices and procedures of this machine.

2.3 BEFORE OPERATION CONSIDERATIONS

1. **NEVER** allow children to operate this riding mower. Do not allow adults to operate this machine without proper instructions.

2. **DO NOT** mow when children and/or others are present.

3. Clear the area to be mowed of objects that could be picked up and thrown by the cutter blades.

4. **DO NOT** carry passengers.

5. **DO NOT** operate the machine under the influence of alcohol or drugs.

6. If the operator(s) or mechanic(s) cannot read English it is the owner's responsibility to explain this material to them.

2.3 BEFORE OPERATION CONSIDERATIONS (CONT'D)

7. **DO NOT** wear loose fitting clothing that could get tangled in moving parts. Do not operate the machine wearing shorts; always wear adequate protective clothing including long pants. Wearing safety glasses, safety shoes and a helmet is advisable and is required by some local ordinances and insurance regulations.

8. Operator hearing protection is recommended, particularly for continuous operation of the mower. Wear suitable hearing protection. Prolonged exposure to loud noise can cause hearing impairment or loss.

9. Keep the machine and attachments in good operating condition. Keep all shields and safety devices in place. If a shield, safety device or decal is defective or damaged, repair or replace it before operating the machine.

⚠WARNING:

This machine is equipped with an interlock system intended to protect the operator and others from injury. This is accomplished by preventing the engine from starting unless the deck drive is disengaged, the parking brake is on, the steering control levers are in the neutral position and the operator is in the seat. The system shuts off the engine if the operator leaves the seat with the deck drive engaged and/or the steering control levers are not in the neutral postion and the parking brake is not engaged. Never operate equipment with the interlock system disconnected or malfunctioning.

10. Be sure the interlock switches are functioning correctly.

11. Fuel is flammable; handle it with care. Fill the fuel tank outdoors. Never fill it indoors. Use a funnel or spout to prevent spillage. Clean up any spillage before starting the engine.

12. **DO NOT** add fuel to a running or hot engine. Allow the engine to cool for several minutes before adding fuel.

13. Keep flammable objects (cigarettes, matches, etc.), open flames and sparks away from the fuel tank and fuel container.

14. Equipment must comply with the latest requirements per SAE J137 and/or ANSI/ASAE S279 when driven on public roads.

    -NOTE-

    If the mower is driven on public roads, it must comply with state and local ordinances as well as SAE J137 and/or ANSI / ASAE S279 requirements. Contact your local authorities for regulations and equipment requirements.

15. **DO NOT** operate without the side discharge chute installed and in the down position.

16. Check the blade mounting bolts at frequent intervals for proper tightness.

17. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before starting the machine.

2.4 OPERATION CONSIDERATIONS

1. Know the function of all controls and how to stop quickly.

2. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing directions on slopes.

⚠WARNING:

DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution. ALWAYS FOLLOW OSHA APPROVED OPERATION.

2.4 OPERATION CONSIDERATIONS (CONT'D)

3. To prevent tipping or loss of control, do not start or stop suddenly. Always avoid unnecessary turns and travel at reduced speed.

4. When using any attachment, never direct the discharge of material toward bystanders or allow anyone near the machine while in operation.

5. Before attempting to start the engine, with the operator in the seat, disengage power to the cutter deck, place the steering control levers in the neutral position and engage the parking brake.

6. If the mower discharge ever plugs, shut off the engine, remove the ignition key, and wait for all movement to stop before removing the obstruction. Do not use your hand to dislodge the clogged discharge chute. Use a stick or other device to remove clogged material.

7. Be alert for holes, rocks, roots and other hidden hazards in the terrain. Keep away from any dropoff. Beware of overhead obstructions (low limbs, etc.), underground obstacles (sprinklers, pipes, tree roots, etc.). Cautiously enter a new area. Be alert for hidden hazards.

8. Disengage power to cutter deck before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.

9. **DO NOT** turn sharply. Use care when backing up.

10. Disengage power to cutter deck before crossing roads, walks or gravel drives.

11. Mow only in daylight or good artificial light.

12. Take all possible precautions when leaving the machine unattended, such as disengaging the mower, lowering the attachments, setting the parking brake, stopping the engine, and removing the key.

13. Disengage power to the attachments when transporting or when not in use.

14. The machine and attachments should be stopped and inspected for damage after striking a foreign object, and damage should be repaired before restarting and operating the machine.

15. **DO NOT** touch the engine or the muffler while the engine is running or immediately after stopping. These areas may be hot enough to cause a burn.

16. **DO NOT** run the engine inside a building or a confined area without proper ventilation. Exhaust fumes are hazardous and could cause death.

2.5 MAINTENANCE CONSIDERATIONS

1. Never make adjustments to the machine with the engine running unless specifically instructed to do so. If the engine is running, keep hands, feet, and clothing away from moving parts.

2. Remove the key from the ignition switch to prevent accidental starting of the engine when servicing or adjusting the machine.

3. Keep all nuts, bolts and screws tight, to ensure the machine is in safe working condition. Check blade mounting bolts frequently to be sure they are tight.

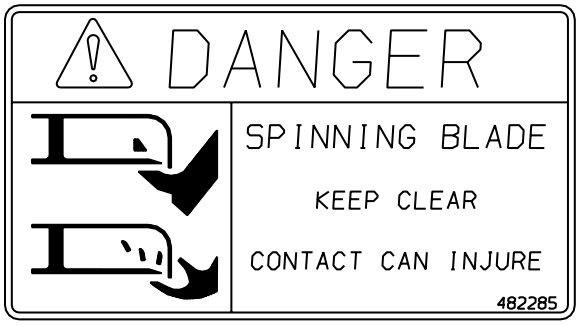
4. Do not change the engine governor settings or overspeed the engine. See the engine operator's manual for information on engine settings.

5. To reduce fire hazard, keep the engine free of grass, leaves, excessive grease, oil and dirt.

⚠ WARNING:

Hydraulic fluid is under high pressure. Keep body and hands away from pinholes or nozzles that eject hydraulic fluid under high pressure. If you need service on your hydraulic system, please see your authorized Scag dealer. If hydraulic fluid is injected into the skin, it must be surgically removed within a few hours by a doctor or gangrene may result.

2.6 SAFETY AND INSTRUCTIONAL DECALS



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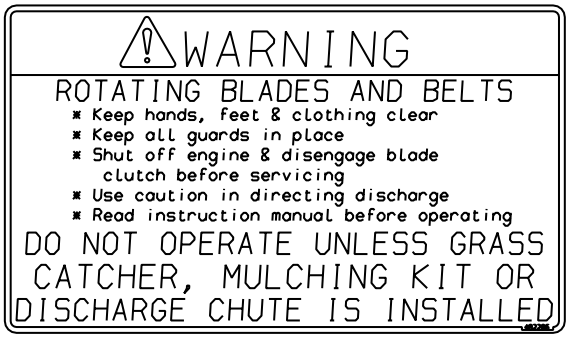
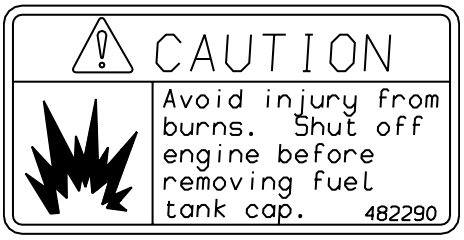
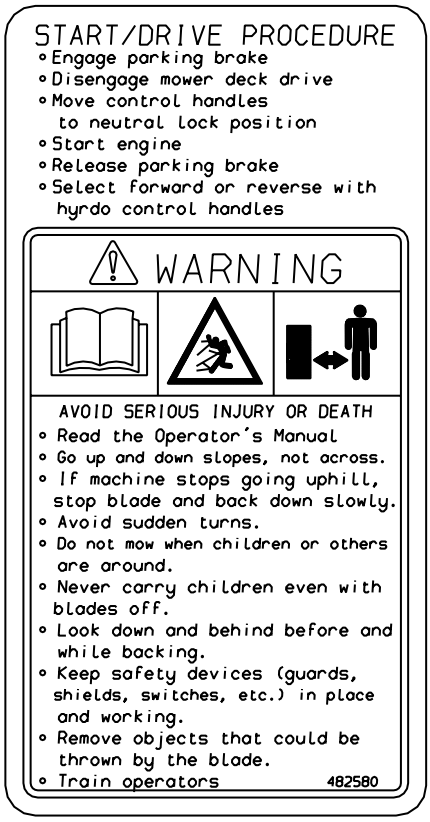

WARNING
ROTATING BLADES AND BELTS
* Keep hands, feet & clothing clear
* Keep all guards in place
* Shut off engine & disengage blade clutch before servicing
* Use caution in directing discharge
* Read instruction manual before operating
DO NOT OPERATE UNLESS GRASS CATCHER, MULCHING KIT OR DISCHARGE CHUTE IS INSTALLED




START/DRIVE PROCEDURE
∘Engage parking brake
∘Disengage mower deck drive
∘Move control handles to neutral lock position
∘Start engine
∘Release parking brake
∘Select forward or reverse with hyrdo control handles
WARNING
AVOID SERIOUS INJURY OR DEATH
∘ Read the Operator's Manual
∘ Go up and down slopes, not across.
∘ If machine stops going uphill, stop blade and back down slowly.
∘ Avoid sudden turns.
∘ Do not mow when children or others are around.
∘ Never carry children even with blades off.
∘ Look down and behind before and while backing.
∘ Keep safety devices (guards, shields, switches, etc.) in place and working.
∘ Remove objects that could be thrown by the blade.
∘ Train operators
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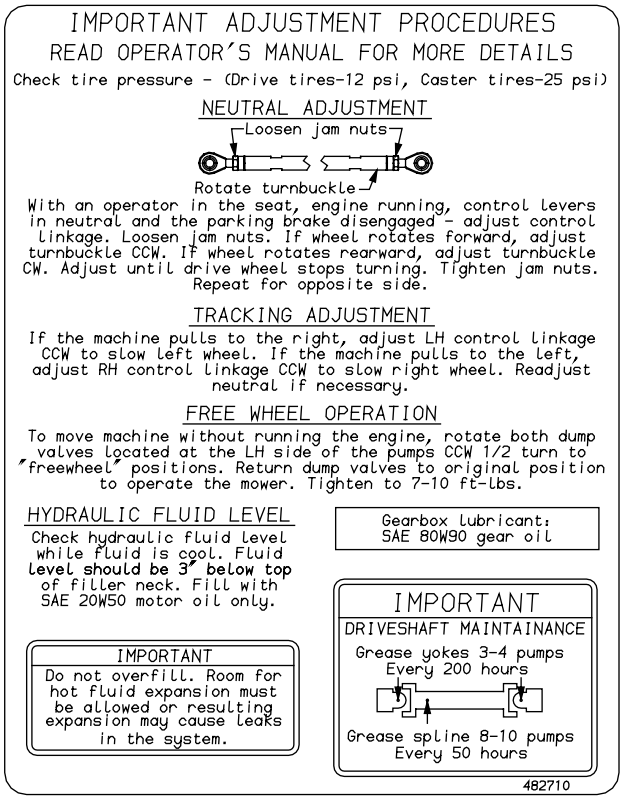
IMPORTANT ADJUSTMENT PROCEDURES
READ OPERATOR'S MANUAL FOR MORE DETAILS
Check tire pressure - (Drive tires-12 psi, Caster tires-25 psi)
NEUTRAL ADJUSTMENT
Loosen jam nuts
Rotate turnbuckle
With an operator in the seat, engine running, control levers in neutral and the parking brake disengaged - adjust control linkage. Loosen jam nuts. If wheel rotates forward, adjust turnbuckle CCW. If wheel rotates rearward, adjust turnbuckle CW. Adjust until drive wheel stops turning. Tighten jam nuts. Repeat for opposite side.
TRACKING ADJUSTMENT
If the machine pulls to the right, adjust LH control linkage CCW to slow left wheel. If the machine pulls to the left, adjust RH control linkage CCW to slow right wheel. Readjust neutral if necessary.
FREE WHEEL OPERATION
To move machine without running the engine, rotate both dump valves located at the LH side of the pumps CCW 1/2 turn to "freewheel" positions. Return dump valves to original position to operate the mower. Tighten to 7-10 ft-lbs.
HYDRAULIC FLUID LEVEL
Check hydraulic fluid level while fluid is cool. Fluid level should be 3" below top of filler neck. Fill with SAE 20W50 motor oil only.
Gearbox lubricant: SAE 80W90 gear oil
IMPORTANT
Do not overfill. Room for hot fluid expansion must be allowed or resulting expansion may cause leaks in the system.
IMPORTANT
DRIVESHAFT MAINTAINANCE
Grease yokes 3-4 pumps Every 200 hours
Grease spline 8-10 pumps Every 50 hours
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SPECIFICATIONS

3.1 ENGINE

General Type	Heavy Duty Industrial/Commercial Gasoline
Brand	Kohler 25HP (Spec. #PS-CH730-0066)
	Kohler 27HP (Spec. #PS-CH740-0021)
	Kawasaki, 23HP (Spec. #FD671D-AS01)
	Kawasaki, 27HP (Spec. #FD750D-AS04)
	Kawasaki, 29HP (Spec. #FD791D-AS03)
Model	Kohler Command, Kaw. FD671D, Kaw. FD750D, Kaw. FD791D
Horsepower	25 HP at 3600 RPM (Model STT52A-25CH, STT61A-25CH)
	23 HP at 3600 RPM (Model STT52A-23KA, STT61A-23KA)
	27 HP at 3600 RPM (Model STT61A-27KA, STT61A-27CH, STT72A-27KA)
	29HP at 3600 RPM (Model STT61A-29KA-DFI, STT72A-29KA-DFI)
Type	4 Cycle Gasoline, Twin Cylinder, Horizontal Shaft
Displacement	25HP Kohler 725cc., 27hp Kohler 725cc.
	23HP Kaw. 745cc., 27HP Kaw. 745cc., 29HP Kaw. 745cc.
Cylinders	2 with Cast Iron Sleeves
Governor	Mechanical Type with Variable Speed Control Set At 3600 RPM
Idle Speed	1400 RPM
Kohler Fuel Pump Group	Mechanical Type Fuel Pump with In-Line Fuel Filter, Fixed Jet Carburetor with Smart-Choke™ and Fuel Shutdown Solenoid
Kawasaki Fuel Pump Group	Electric Fuel Pump with In-Line Fuel Filter,Fixed Jet Downdraft Carburetor.
Fuel	Non-Leaded Gasoline with a Minimum Octane Rating of 87
Oil Pump Group	Positive Displacement Gerotor™ Oil Pump with Remote Oil Filter
Starter	Electric Starting with Solenoid Shift Starter
Belts:	Kevlar cord. Self-adjusting, Self-tightening
Deck Drive Belt	Scag Part Number - 481460
Pump Drive Belt	Scag Part Number - 482641
Kawasaki Fan Belt	Part Number - Mitsubishi 59011-2056 (Avail. Through Kawasaki)

3.2 ELECTRICAL

Battery	12 Volt
Charging System	Alternator
Charging Output	12 Volt, 15 Amp
System Polarity	Negative Ground
Starter	12 Volt Electric Ring Gear Type, Key and Solenoid Operated Interlock
Switches	Seat, Neutral Control, Mower Engagement (BBC), Parking Brake
Instrument Panel	Ammeter, Key Switch, Throttle Lever, Manual Choke, BBC Switch,
	Fuses and Safety Start module, Temp. gauge (KA), Check Engine
	Indicator (DFI)
Fuses	Two (2) 20 Amp

3.3 TRACTOR

Drive System	Hydraulic Drive with Two Variable Displacement Pumps and Two
	Cast-iron High Torque Motors
Hydrostatic Pumps	Two Hydro-Gear™ BDP 16A Pumps with Dump Valves for movement without running the engine and pressure relief valves
Drive Wheel Motors	Two Ross Model TG 15 cu. inch Cast-iron High Torque Motors
Steering/Travel Control	Twin Lever Fingertip Steering Control with Individual Control to Each Wheel with Gas Spring Dampers
Parking Brake	Lever Actuated Linkage to Brakes on Both Drive Wheel Axles
Wheels:	
(2) Front Caster	13 X 5.00 Four-Ply, 52". 13 X 6.00 Four Ply, 61" & 72"
(2) Drive	23 X 10.5 X 12 Four-Ply Pneumatic Tubeless, Radius Edge, 52"
	24X12.0X12 Four-Ply Pneumatic Tubeless, Radius Edge, 61"
Fuel Tank	10-Gallon Seamless Polyethylene Tank with Large opening and
	Fuel Gauge Fill Cap

3.3 TRACTOR (CONT'D)

Tire Pressure:
- Front Caster ..... 25 PSI
- Drive ..... 12 PSI

Seat ..... Padded, Thick Cushion with tall back rest

Travel Speed:
- Forward ..... 0-10 MPH
- Reverse ..... 0-5 MPH

-NOTE-

The machine will travel at 10mph for transport purposes. For best cutting performance the forward travel speed should be adjusted depending upon the cutting conditions.

3.4 CUTTER DECK

Type: ..... Floating, Adjustable, Anti-scalping, Hybrid Design Combines Out-front and Belly-mount Designs

Construction: ..... 10-gauge steel reinforced with 7-gauge (3/16") Support Plate. 7-gauge (3/16") deck skirt.

True Cutting Width: ..... 52" (132.0 cm), 61" (155.0 cm)

Cutting Height Adjustment: ..... Foot Operated Lever Adjustment from Operator's Seat, 1.00" to 6.00" in 1/4"increments

Cutter Blades: ..... .197 Thick, Milled Edge, Wear Resistant Marbain™
SMT 52A: Three (3) 18" blades
SMT 61A: Three (3) 21" blades
SMT 72A: Three (3) 24-1/2" blades

Blade Engagement: ..... Electric Blade Engagement Clutch with Control Panel Switch Connected to the Cutter Deck Gearbox through a Drive Shaft.

Discharge Opening: ..... Extra Wide 11.5" Discharge Opening with Spring Loaded Discharge Chute

Discharge Chute..... Black, Polypropylene (Plastic), Flexible

Caster Wheels: ..... 13x 5.00 Four-Ply (52"), 13 X 6.00 Four-Ply (61" & 72")

Spindles: ..... Heavy-duty 1-1/8" Top Dimension Spindle Shaft, Cast Housing, Taper Roller Bearing, Low Maintenance with Top Access Grease Fitting and Grease Overfill Relief Poppet

Spindle Pulleys: ..... Cast-iron with Easily Removed Taper Hubs

Cutter Deck Belts: ..... B-section with Kevlar Cord. Self-adjusting, Self-tightening
- SMT52 ..... Scag Part Number - 482281
- SMT61 ..... Scag Part Number - 481558
- SMT72 ..... Scag Part Number - 481980

Electric Clutch Type ..... Ogura Electric Clutch

Drive Shaft ..... Clamp Yoke Shaft With Two High Speed U-Joints

3.6 HYDRAULIC SYSTEM

Hydraulic Oil Filter ..... 10 Micron Spin-on Element Type

Hydraulic Reservoir ..... Nylon; 3 Quart Capacity

3.7 WEIGHTS AND DIMENSIONS

	SMT52A	SMT61A	SMT72A
Length	82.5"	87.5"	90"
Tracking Width	52"	55"	55"
Overall Width	62"	72"	83.5"
Overall Height	46"	46"	46"
Operating Weight	1200#	1298#	1348#

3.8 PRODUCTIVITY

The following chart will aid you in determining how many acres your Scag mower will cut per day.

The chart is an estimate based on 8 hours per day cutting time at 4 MPH with an allowance for overlap and turns.

Cutting Width:	36"	48"	52"	61"	72"
Acres Per Day:	9.5	12.5	13.5	16	19

OPERATING INSTRUCTIONS

⚠ CAUTION:

Do not attempt to operate this mower unless you have read this manual. Learn the location and purpose of all controls and instruments before you operate this mower.

4.1 CONTROLS AND INSTRUMENT IDENTIFICATION

Before operating the mower, familiarize yourself with all mower and engine controls. Knowing the location, function and operation of these controls is important for safe and efficient operation of the mower.

1. **Ignition Switch (Figure 4-1).** The ignition switch is used to start the engine and has three positions; OFF, ON, and START.

2. **Mower Deck Switch (Figure 4-1).** Used to engage and disengage the mower drive system. Pulling up on the switch will engage the deck drive. Pushing down on the switch will disengage the deck drive.

3. **Engine Choke Control (Figure 4-1).** Used to start a cold engine.

4. **Engine Throttle Control (Figure 4-1).** Used to control the engine speed. Pushing the lever forward increases engine speed. Pulling the lever back decreases engine speed. Full back position is the IDLE position. Full forward is the cutting position.

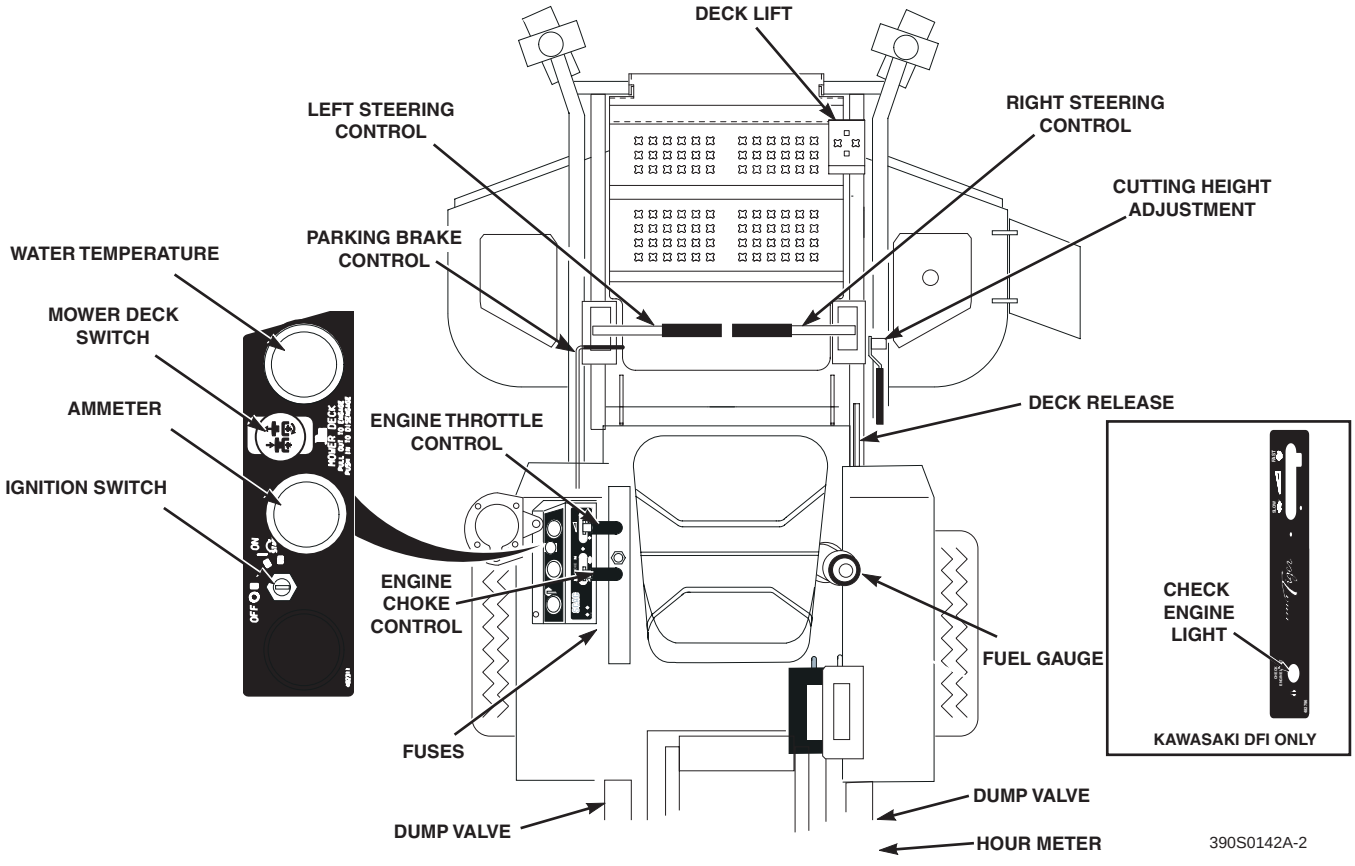


Figure 4-1 Controls and Hour Meter Instruments

5. **Ammeter (Figure 4-1).** Indicates the condition of the charging system. When the engine is running the needle should be toward the positive end of the meter. If the needle is toward the negative end of the meter, this indicates a discharge condition and the machine should be taken in for service.

6. **Hourmeter (Figure 4-1).** Indicates the number of hours the engine has been operated. It operates whenever the ignition key switch is in the ON position. It can be used to keep track of maintenance intervals and the amount of time required to perform various tasks.

7. **Fuse Holders (Figure 4-1).** Two 20-amp fuses protect the mower's electrical system. To replace fuses, pull fuse out of the socket and install a new fuse.

8. **Left Steering Control (Figure 4-1).** Used to control the mower's left wheel when traveling forward or reverse.

9. **Right Steering Control (Figure 4-1).** Used to control the mower's right wheel when traveling forward or reverse.

10. **Parking Brake Control (Figure 4-1).** Used to engage and disengage the parking brakes. Pull the lever back to engage the parking brakes. Push the lever forward to disengage the parking brakes.

11. **Fuel Tank Gauge (Figure 4-1)**. Indicates the amount of fuel in the fuel tank.

12. **Dump Valve Control Levers (Figure 4-2).** Located on the hydraulic pumps, used to "free-wheel" the mower. Rotating the valves clockwise until they stop allows the unit to move under hydraulic power. The valves must be in this position and torqued to 10ft/lbs during operation of the mower. Rotating the valves counter-clockwise allows the mower to be moved by hand (free-wheeling).

13. **Deck Lift Foot Lever (Figure 4-1).** Used to raise and lower the cutter deck.

14. **Cutting Height Adjustment (Figure 4-1).** Used to set the cutter deck at the desired cutting height.

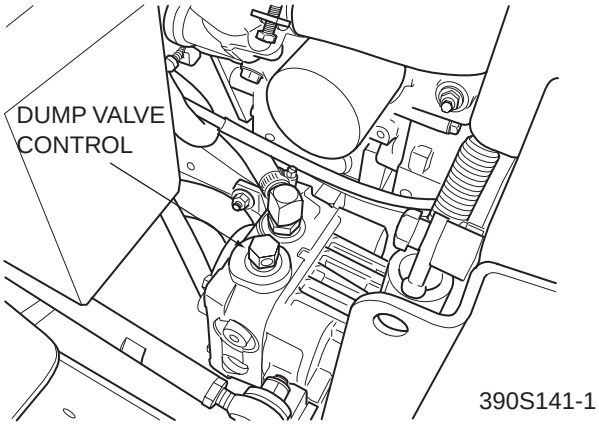


Figure 4-2 Dump Valve Control

15. **Deck Release Lever (Figure 4-1).** Used to lock the cutter deck in the transport position. Push the foot pedal forward and lift up on the release lever to release the cutter deck for normal mowing.

16. **Temperature Gauge (Figure 4-1).** Indicates the operating temperature of the engine. *Used on mowers with the Kawasaki liquid cooled engine only.*

17. **Check Engine Light (Figure 4-1).** Indicates the operation of the engine sensors on the Kawasaki Digital Fuel Injection (DFI). Light will flash once at initial start up. If problem occurs with a sensor on the engine, the light will flash a code. See your authorized Scag Dealer for diagnosis and repair.

4.2 SAFETY INTERLOCK SYSTEM

The mower is equipped with a safety interlock system that prevents the engine from starting unless the deck drive is disengaged, the parking brake is engaged, the steering control levers are in the neutral position and the operator is in the seat. The interlock system shuts off the engine if the operator leaves the seat with the steering control levers not in the neutral position and/or the cutter blades engaged and the parking brake not engaged.

⚠ WARNING:

Never operate the mower with the interlock system disconnected or malfunctioning. Do not disengage or bypass any switch; injury to yourself and others or property damage could result.

4.3 INITIAL RUN-IN PROCEDURES (First Day of Use or Approximately 10 Hours)

1. Check all belts for proper alignment and wear at 2, 4 and 8 hours.

2. Change the engine oil and oil filter after the first 5 hours of operation. (See Section 7.4.)

3. Check oil level in the hydraulic system reservoir. (See Section 7.3.)

4. Check for loose hardware. Tighten as needed.

5. Check interlock system for proper operation. (See Section 4.2.)

6. Check tire pressure. Adjust pressure if necessary. (See Section 7.10.)

4.4 STARTING THE ENGINE

⚠ CAUTION:

DO NOT USE STARTING FLUIDS. Use of starting fluids in the air intake system may be potentially explosive or cause a "runaway" engine condition that could result in engine damage and/or personal injury.

1. Be sure the fuel shutoff valve, located behind the operator's seat, is completely open. (See section 7.5.)

2. Sit in the operator's seat and place the steering control levers in the neutral position.

3. Engage the parking brake.

4. If the engine is cold, choke the engine as needed.

5. Move the engine throttle control to about half engine speed.

6. Turn the ignition key to the START position and release the key as soon as the engine starts. Do not hold the key in the START position for more than 15 seconds at a time. Allow at least 60 seconds between each cranking attempt to prevent overheating of the starter motor. Prolonged cranking can damage the starter motor and shorten battery life.

7. Allow engine to warm before operating the mower.

4.5 GROUND TRAVEL AND STEERING

-IMPORTANT-

If you are not familiar with the operation of a machine with lever steering and/or hydrostatic transmissions, the steering and ground speed operations should be learned and practiced in an open area, away from buildings, fences, or obstructions. Practice until you are comfortable with the handling of the machine before attempting to mow. Learn the operation on flat ground before operating on slopes.

-IMPORTANT-

Start practicing with a slow engine speed and slow forward travel.

Learn to feather the steering controls to obtain a smooth operating action.

Practice operating the mower until you are comfortable with the controls before proceeding to mow.

Forward Travel

To travel forward with the mower, disengage the parking brake and slowly push the steering control levers forward an equal distance. The further the steering control levers are pushed forward the greater the forward speed will be. To increase the speed, push the steering control levers further forward and to decrease the speed, pull the steering control levers back.

To stop the forward travel, pull the steering control levers back to the neutral position.

To steer the mower left while traveling forward, pull the left steering lever back. The further the lever is pulled back, the quicker the mower will turn left.

To steer the mower right while traveling forward, pull the right steering control lever back. The further the lever is pulled back, the quicker the mower will turn right.

-NOTE-

Smooth operation of the steering levers will produce smooth mower operation. While learning the operation of the steering controls, keep the travel speed low.

-IMPORTANT-

Do not travel forward over a curb. The mower will hang up on the curb. Raise the deck and travel backwards over the curb at a 45 degree angle. (See section 4.13 for cutter deck raising instructions)

Reverse Travel

⚠ CAUTION:

Disengage power to the mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.

⚠ CAUTION:

Before backing up, observe behind the mower for persons and obstructions. Clear the area before backing up. Possible injury or property damage could occur.

To travel in reverse, pull both handles back. Keep the travel speed low while traveling in reverse.

-NOTE-

The mower may not travel straight in reverse. Slight adjustments may need to be made using the steering controls.

To steer left while traveling in reverse, allow the left steering control lever to move forward. The further the control is allowed to move forward, the quicker the mower will turn left.

To steer right while traveling in reverse, allow the right steering control lever to move forward. The further the control is allowed to move forward, the quicker the mower will turn right.

To stop the reverse travel, allow the steering control levers to return to the neutral position. If the mower is to be parked, engage the parking brake.

4.6 ENGAGING THE DECK DRIVE (CUTTER BLADES)

1. Set the throttle at about 3/4 speed. Do not attempt to engage the deck drive at high speed as this shortens the electric clutch life — use only moderate engine speed when engaging the deck drive.

2. Engage the deck drive by pulling out on the yellow switch, located on the instrument panel, (Figure 4-3) to the engage position.

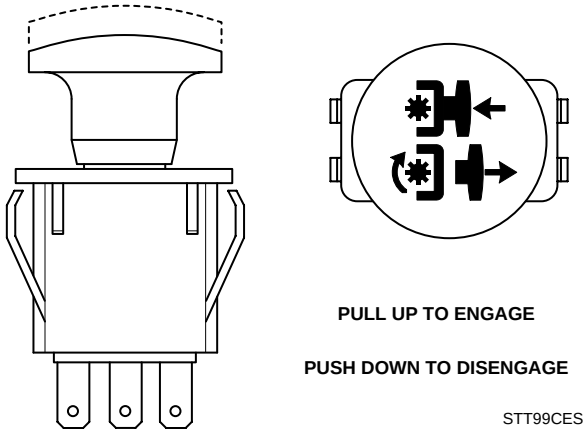


Figure 4-3 Cutter Engage Switch

-NOTE-

A squealing noise may be heard when engaging or disengaging the deck drive. It is caused by the electric clutch plates meshing as the mower comes up to speed. This is normal.

3. To disengage the deck drive, push the switch in to the disengage position.

4. Always operate the engine at full throttle to properly maintain cutting speed. If the engine starts to lug down, reduce the forward speed and allow the engine to operate at maximum RPM.

4.7 HILLSIDE OPERATION

⚠ WARNING:

DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution. ALWAYS FOLLOW OSHA APPROVED OPERATION.

1. The mower has been designed for good traction and stability under normal mowing conditions. However, caution must be used when traveling on slopes, especially when the grass is wet. Wet grass reduces traction and steering control.

2. To prevent tipping or loss of control, do not start or stop suddenly, avoid unnecessary turns and travel at reduced speed.

3. Keep tires properly inflated.

4.8 PARKING THE MOWER

1. Place the steering control levers in the neutral position.

2. Disengage the cutter blades

3. Slow the engine to idle speed.

4. Engage the parking brake.

5. Turn the ignition key to the OFF position and remove the key.

4.9 AFTER OPERATION

1. Wash the entire mower after each use. Do not use high pressure spray or direct the spray onto electrical components.

   -IMPORTANT-

   Do not wash a hot or running engine. Cold water will damage the engine. Use compressed air to clean the engine if it is hot.

2. Keep the entire mower clean to inhibit serious heat damage to the engine or hydraulic oil circuit.

3. Check the drive belts for proper alignment and any signs of wear. Correct and adjust if necessary.

⚠ DANGER:

To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.

4. After the mower has cooled down, fill the fuel tank with fresh, clean fuel at the end of every day of operation.

5. Check the tire pressure. Adjust pressure if necessary.

4.10 REMOVING CLOGGED MATERIAL

⚠ DANGER:

ROTATING BLADES

NEVER PUT YOUR HANDS INTO THE DISCHARGE CHUTE FOR ANY REASON! Shut off the engine and remove the key and only then use a stick or similar object to remove material if clogging has occurred.

1. If the discharge chute becomes clogged, shut off the engine and remove the ignition key. Using a stick or similar item, dislodge the clogged material. Then resume normal mowing.

4.11 MOVING MOWER WITH ENGINE STOPPED

To “free-wheel” or move the mower around without the engine running, place the dump valve levers in the FREE-WHEEL position (Figure 4-2). Disengage the parking brake and move the mower by hand. The dump valve levers must be returned to the DRIVE position and torqued to 10ft/lbs to drive the mower.

4.12 RECOMMENDATIONS FOR MOWING

1. Do not mow with dull blades. A dull blade will tear grass, resulting in poor lawn appearance and require extra power.

2. The discharge chute must not be removed and must be kept in the lowest position to deflect grass clippings and thrown objects downward. Direct the side discharge away from sidewalks or streets to minimize cleanup of clippings. When mowing close to obstacles, direct the discharge away from the obstacles to reduce the chance of property damage by thrown objects.

⚠ WARNING

DO NOT OPERATE WITHOUT DISCHARGE CHUTE, MULCHING KIT, OR ENTIRE GRASS CATCHER INSTALLED

3. Cut grass when it is dry and not too tall. Do not cut grass too short (cut off 1/3 or less of existing grass for best appearance). Mow frequently.

4. Keep mower and discharge chute clean.

5. When mowing wet or tall grass, mow the grass twice. Raise the mower to the highest setting for the first pass and then make a second pass to the desired height.

6. Use a slow travel speed for trimming purposes.

7. Operate the engine at full throttle for best cutting. Mowing with a lower RPM causes the mower to tear the grass. The engine is designed to be operated at full speed.

8. Use the alternate stripe pattern for best lawn appearance. Vary the direction of the stripe each time the grass is mowed to avoid wear patterns in the grass.

4.13 ADJUSTING CUTTING HEIGHT

The mower deck can be adjusted from a height of 1-inch to 6 inches at 1/4-inch intervals. To adjust the cutting height:

⚠ WARNING:

Do not adjust the cutting height with the mower blades rotating. Disengage the power to the cutter blades, put levers in the neutral lock position, apply the brake and then adjust cutting height.

1. Disengage the power to the cutter blades.

2. Push the cutting height adjustment foot pedal all the way forward using your right foot until it locks in place. (Figure 4-6).

3. Insert the lanyard pin into the cutting height index at the desired cutting height. Push forward on the deck lift foot lever, hold in place and lift up on the deck release lever, (Figure 4-7, Page 16). Slowly release the foot pedal. A deck height decal is located on the cutting height index as an aid in adjusting the deck to the desired height. (Figure 4-6).

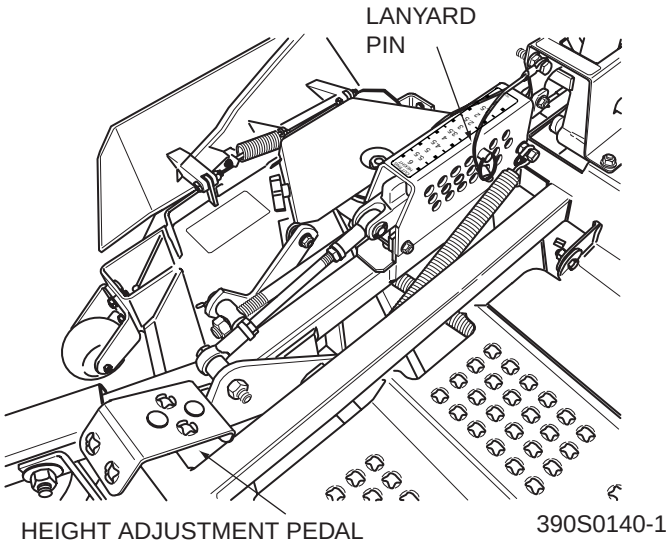


Figure 4-6 Adjusting Cutting Height

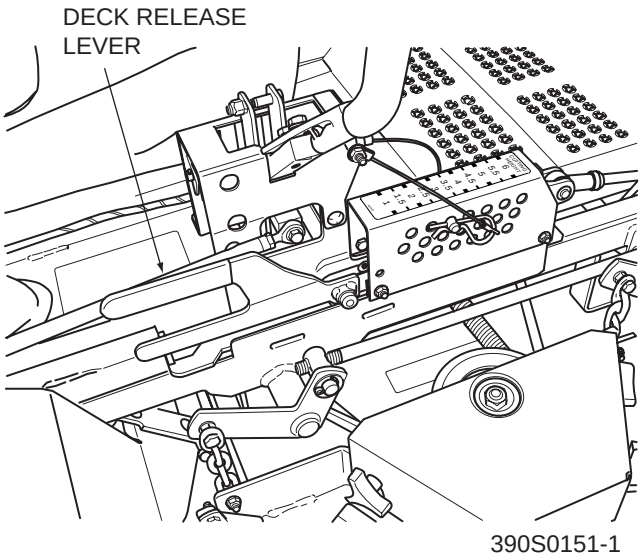


Figure 4-7 Deck Release Lever

4.14 Towing (optional hitch accessory)

1. Never allow children or others in or on towed equipment.

2. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.

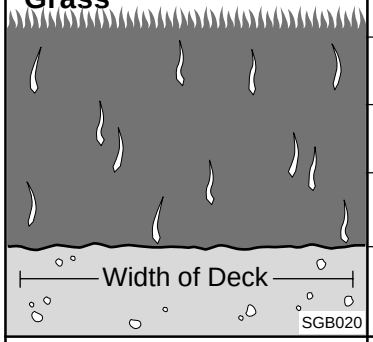
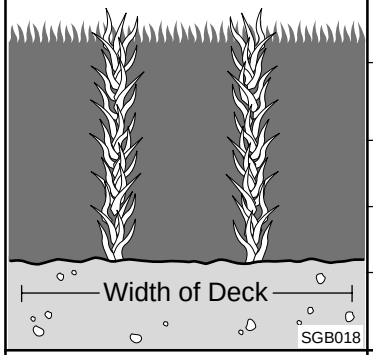
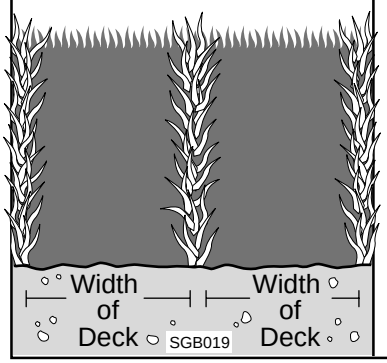
3. Follow manufacturer's recommendations for weight limit for towed equipment. 250lbs. maximum towing weight.

4. **Never tow on slopes**. The weight of the towed equipment may cause loss of traction and loss of control.

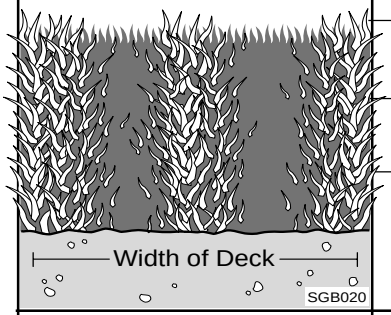
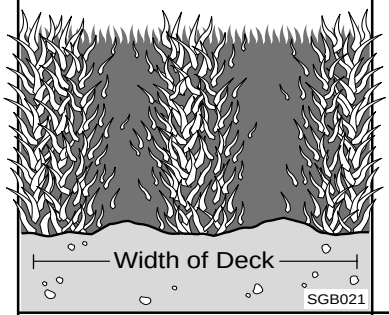
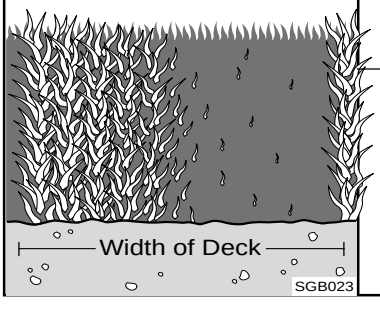
5. Travel slowly and allow extra distance to stop.

6. Zero turning with a trailer attached, could cause damage to the trailer or mower.

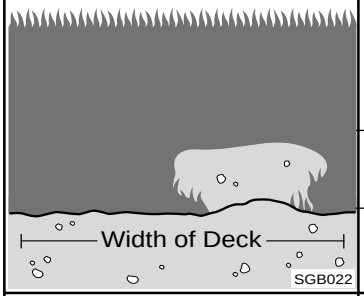
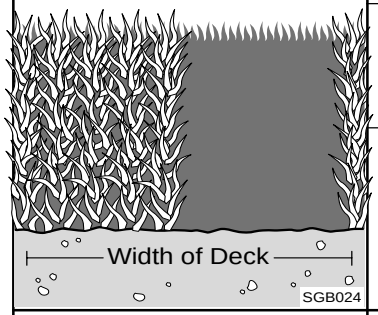
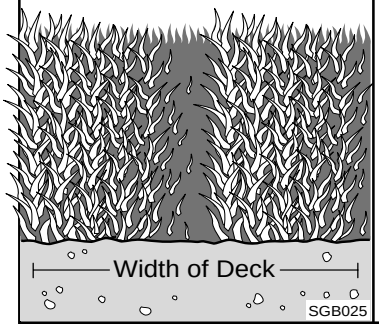
TROUBLESHOOTING CUTTING CONDITIONS

CONDITION	CAUSE	CURE
Stringers - Occasional Blades of Uncut Grass 	Low engine RPM	Run engine at full RPM
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
	Dull blades, incorrect sharpening	Sharpen blades
	Deck plugged, grass accumulation	Clean underside of deck
	Belts slipping	Adjust belt tension
Streaking - Strips of Uncut Grass in Cutting Path 	Dull, worn blades	Sharpen blades
	Incorrect blade sharpening	Sharpen blades
	Low engine RPM	Run engine at full RPM
	Belt slipping	Adjust belt tension
	Deck plugged, grass accumulation	Clean underside of deck
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
	Bent blades	Replace blades
Streaking - Strips of Uncut Grass Between Cutting Paths 	Not enough overlapping between rows	Increase the overlap of each pass

TROUBLESHOOTING (CONT'D)

CONDITION	CAUSE	CURE
Uneven Cut on Flat Ground - Wavy High-Low Appearance, Scalloped Cut, or Rough Contour 	Lift worn from blade	Replace blade
	Blade upside down	Mount with cutting edge toward ground
	Deck plugged, grass accumulation	Clean underside of deck
	Too much blade angle (deck pitch)	Adjust pitch and level
	Deck mounted improperly	See your authorized SCAG dealer
	Bent spindle area	See your authorized SCAG dealer
	Dull blade	Sharpen blade
Uneven Cut on Uneven Ground - Wavy Appearance, High-LowScalloped Cut, or Rough Contour 	Uneven ground	May need to reduce ground speed, raise cutting height, and/or change direction of cut
Sloping Ridge Across Width of Cutting Path 	Tire pressures not equal	Check and adjust tire pressure
	Wheels uneven	Check and adjust tire pressure
	Deck mounted incorrectly	See your authorized SCAG dealer
	Deck not level side-to side	Check for level and correct

TROUBLESHOOTING (CONT'D)

CONDITION	CAUSE	CURE
Scalping - Blades Hitting Dirt or Cutting Very Close to the Ground 	Low tire pressures	Check and adjust pressures
	Ground speed too fast	Slow speed to adjust for conditions
	Cutting too low	May need to reduce ground speed, raise cutting height, change direction of cut, and/or change pitch and level
	Rough terrain	May need to reduce ground speed, raise cutting height, and/or change direction of cut
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
Step Cut - Ridge in Center of Cutting path 	Blades not mounted evenly	Adjust pitch and level
	Bent blade	Replace blade
	Internal spindle failure	See your authorized SCAG dealer
	Mounting of spindle incorrect	See your authorized SCAG dealer
Slope Cut - Sloping Ridges Across Width of Cutting Path 	Bent spindle mounting area	See your authorized SCAG dealer
	Internal spindle failure	See your authorized SCAG dealer
	Bent deck housing	See your authorized SCAG dealer

ADJUSTMENTS

6.1 PARKING BRAKE ADJUSTMENT

⚠ WARNING:

Do not operate the mower if the parking brake is not operable. Possible severe injury could result.

The parking brake linkage should be adjusted whenever the parking brake lever is placed in the "ENGAGE" position and the parking brake will allow the mower to move. If the following procedures do not allow you to engage the parking brake properly, contact your Scag dealer for further brake adjustments.

1. Position a floor jack under the rear of the machine. Raise the machine and support it to prevent it from falling. Block the caster wheels to prevent the machine from moving. Remove the drive wheels.

2. With the brake lever in the disengaged position, check the distance between the top of the frame tube and the bottom of the brake handle. The distance should be 2" to 2-1/4" (See Figure 6-1).

3. If the distance is not at the specified measurement, adjust by loosening the jam nuts at both ends of the brake control rod and turning the rod until the proper distance is achieved. (See Figure 6-1). Tighten the jam nuts.

4. With the brake in the engaged position, check the distance between the lower nut on the brake actuator rod and the brake actuator lever on the LH side of the machine. The distance should be 1/8" (See Figure 6-2).

5. If the distance is not at the specified measurement, loosen the jam nut at the clevis on the top of the brake actuator rod (See Figure 6-2).

6. Turn the bolt at the bottom of the brake actuator lever until the 1/8" measurement is achieved and tighten the jam nut at the clevis on the brake actuator rod. (See Figure 6-2).

7. Repeat steps 4-6 on the RH side of the machine.

8. Replace the drive wheels and test the brake.

-NOTE-

If this procedure does not achieve proper brake adjustment, please contact your authorized Scag dealer.

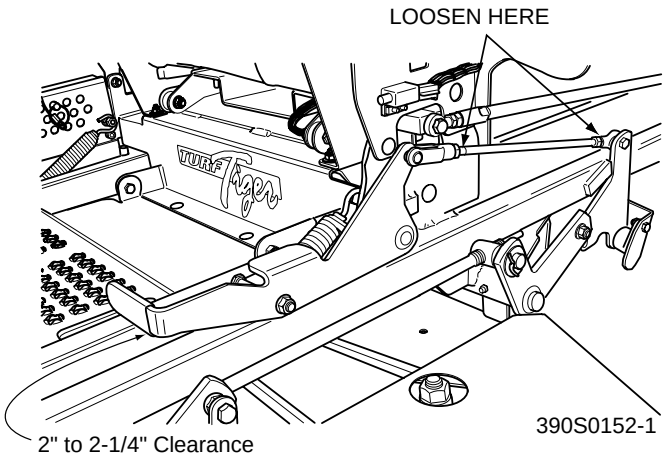


Figure 6-1. Brake Adjustment

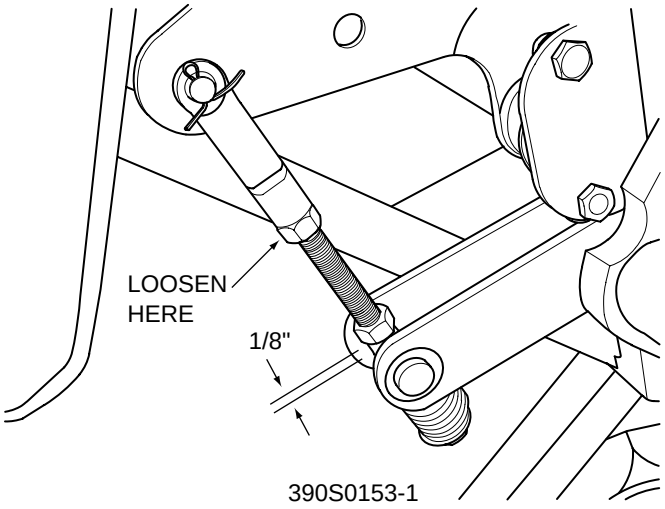


Figure 6-2. Brake Rod Adjustment

6.2 TRAVEL ADJUSTMENTS

Neutral or tracking adjustments will need to be made if:

A. The steering control levers are in the neutral position and the machine creeps forward or backward. (Neutral Adjustment, See Page 21).

B. The steering control levers are in the full forward position and the mower pulls to one side or the other when traveling in a forward direction. (Tracking Adjustment, See Page 22).

Neutral Adjustment

1. Be sure the dump valve levers are in the run position and the steering control levers are in the neutral lock position.

2. With an operator in the seat, start the engine and disengage the parking brake.

3. Run the engine at full operating speed and check if the machine creeps forward or backwards.

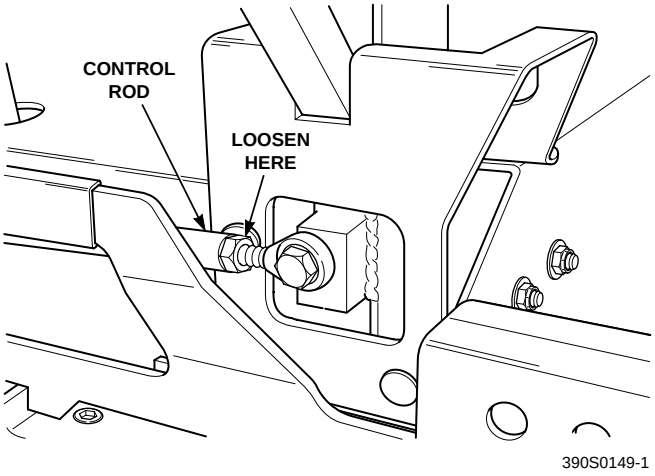
4. Adjust the RH wheel by loosening the jam nuts on the steering control rod and turning the rod until the drive wheel turns in the forward direction. Turn the rod back until the drive wheel stops moving. Turn the rod an additional 1/2 turn. (See Figure 6-3).

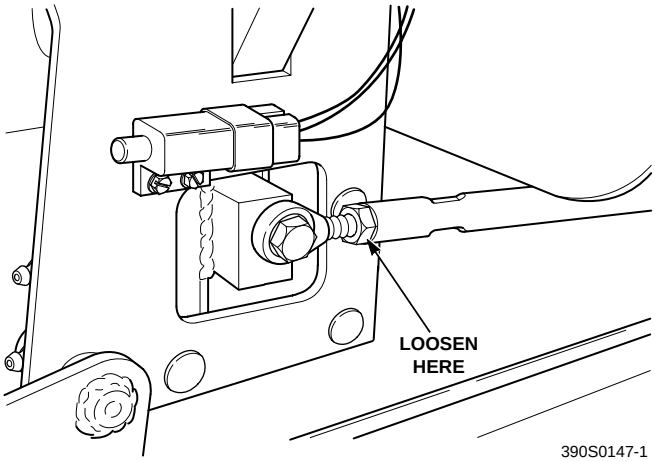
5. Tighten the jam nuts and repeat for the LH wheel. (See Figure 6-4).

6. Actuate the steering control levers forward and reverse serveral times and return them to the neutral position.

7. Check that the drive wheels remained in neutral and readjust if necessary.

8. Check that the steering control levers hit the stop before the pumps reach full stroke. Adjust as needed.





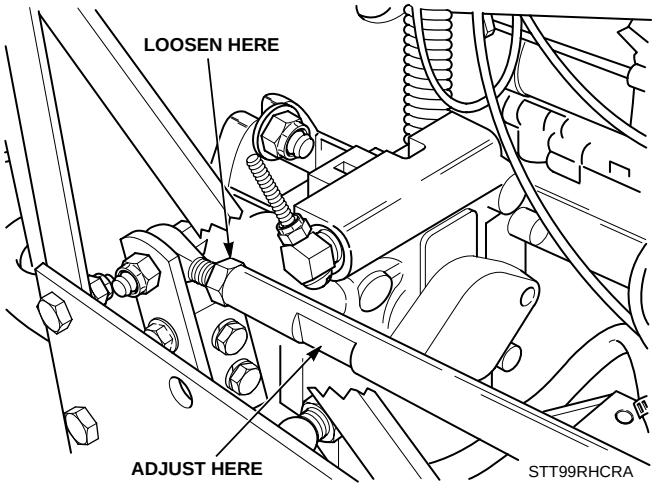


Figure 6-3. RH Steering Control Rod Adjustment

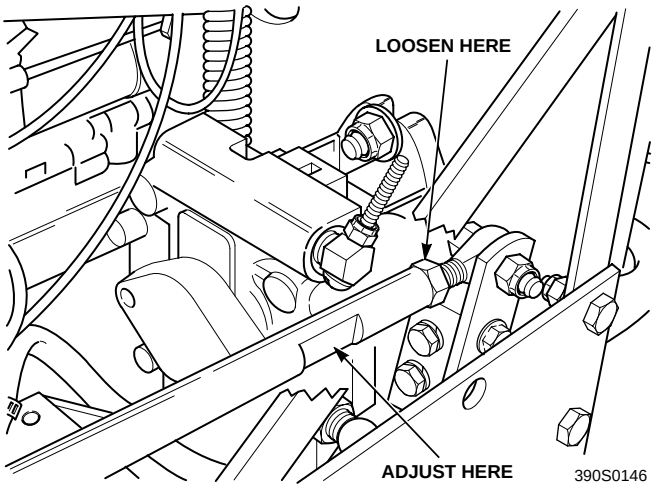


Figure 6-4. LH Steering Control Rod Adjustment

Tracking Adjustment

⚠ CAUTION:

Stop the engine and remove the key from the ignition before making any adjustments. Wait for all moving parts to come to a complete stop before beginning work.

⚠ CAUTION:

The engine and drive unit can get hot during operation causing burn injuries. Allow engine and drive components to cool before making any adjustments.

-NOTE-

Before proceeding with this adjustment, be sure that the caster wheels turn freely and that the tire pressure in the drive wheels is correct. If the tire pressure is not correct, the machine will pull to the side with the lower pressure.

1. If at full speed the mower pulls right, it is an indication that the left wheel is turning faster than the right wheel. To adjust this condition, proceed as follows:

   A. Stop the machine and place the steering control levers in the neutral position. Loosen the lock nuts securing the ball joints at each end of the LH steering control rod. Rotate the control rod to lengthen the rod and tighten the lock nuts. This will cause the control rod to stroke the LH pump less, slowing down the LH wheel. (See Figure 6-4)

-NOTE-

If after making the adjustment as outlined in step 1A, the machine creeps forward or backward, the neutral adjustment must be made as described on page 21.

2. If at full speed the mower pulls left, it is an indication that the right wheel is turning faster than the left wheel. To adjust this condition, proceed as follows:

   A. Stop the machine and place the steering control levers in the neutral position. Loosen the lock nuts securing the ball joints at each end of the RH steering control rod. Rotate the control rod to lengthen the rod and tighten the lock nuts. This will cause the control rod to stroke the RH pump less, slowing down the RH wheel. (See Figure 6-3)

-NOTE-

If after making the adjustment as outlined in step 2A, the machine creeps forward or backward, the neutral adjustment must be made as described on page 21.

6.3 THROTTLE CONTROL AND CHOKE ADJUSTMENTS

These adjustments must be performed by your Scag dealer to ensure proper and efficient running of the engine. Should either need adjustment, contact your authorized Scag service center.

6.4 BELT ADJUSTMENT

⚠ WARNING:

Before removing any guards, shut the engine off and remove the ignition key.

All drive belts and cutter deck belts are spring loaded and self-tensioning. The belts should be checked periodically for proper alignment and wear.

6.5 BELT ALIGNMENT

Belt alignment is important for proper performance of your Scag mower. If you experience frequent belt wear or breakage, see your authorized Scag service center for belt adjustment.

6.6 CUTTER DECK ADJUSTMENTS

Cutter deck level, pitch and height are set at the factory. However, if these adjustments should ever need to be made, the following procedures will aid in obtaining the proper cutter deck adjustment.

-NOTE-

Before proceeding with the cutter deck adjustments, be sure that all tires are properly inflated.

Cutter Deck Level

The cutter deck should be level from side-to-side for proper cutting performance. To check for level, be sure that the mower is on a flat, level surface, the tires are properly inflated and the cutter deck is set at the most common cutting height that you will use. On the RH side of the machine, check the distance from the bottom of the cutter deck to the floor. Next check the distance from the bottom of the cutter deck to the floor on the LH side of the machine. Both measurements should be the same. If the two measurements are different, the cutter deck level must be adjusted as follows:

1. On the front LH side of the cutter deck locate the cutter deck adjusting bolt.

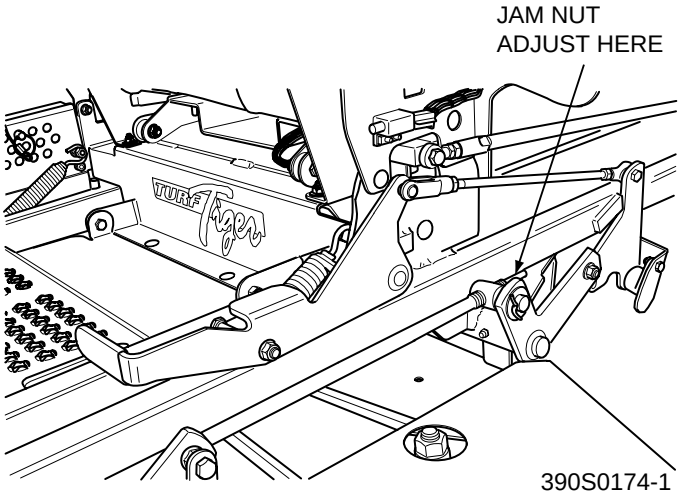


Figure 6-5. Cutter Deck Adjustment

2. Loosen the serrated flange hex nut and move the bolt up or down in the slot to adjust the cutter deck until the distance from the bottom of the cutter deck to the floor is the same as the measurement on the RH side of the machine.
3. Tighten the serrated hex nut to secure the cutter deck in the proper position.

Cutter Deck Pitch

The pitch of the cutter deck should be 1/4" down toward the front of the cutter deck for proper cutting performance. To check for proper deck pitch, be sure that the mower is on a flat, level surface and the tires are properly inflated.

Check the distance from the bottom of the cutter deck to the floor at the rear RH side of the cutter deck directly behind the cutter deck hanging chains. Next check the distance from the bottom of the cutter deck to the floor at the front RH side of the cutter deck directly in front of the cutter deck hanging chains. The measurement at the front of the cutter deck should be 1/4" lower than the measurement at the rear of the deck. Make these measurements at the LH side of the cutter deck also. If the measurement at the front of the deck is not 1/4" lower, the cutter deck pitch must be adjusted as follows:

1. Loosen the jam nut on both adjusting rods. (See Figure 6.5)
2. Using a wrench on the jam nut (See Figure 6.5) turn the adjusting rods until the 1/4" forward pitch is obtained on both the RH and the LH side of the cutter deck. Tighten both jam nuts.

-NOTE-

To prevent the cutter deck from teetering, all four cutter deck hanging chains must have tension on them. If all four chains do not have tension on them and the deck teeters, you must readjust the cutter deck as outlined in the procedures above.

Cutter Deck Height

The cutter deck height adjustment is made to ensure that the cutter deck is cutting at the height indicated on the cutting height index gauge. To check for proper deck height, be sure that the mower is on a flat, level surface and the tires are properly inflated.

1. Place the cutter deck in the transport position. Loosen the jam nuts on both ends of the deck height control rod. (See Figure 6.6)

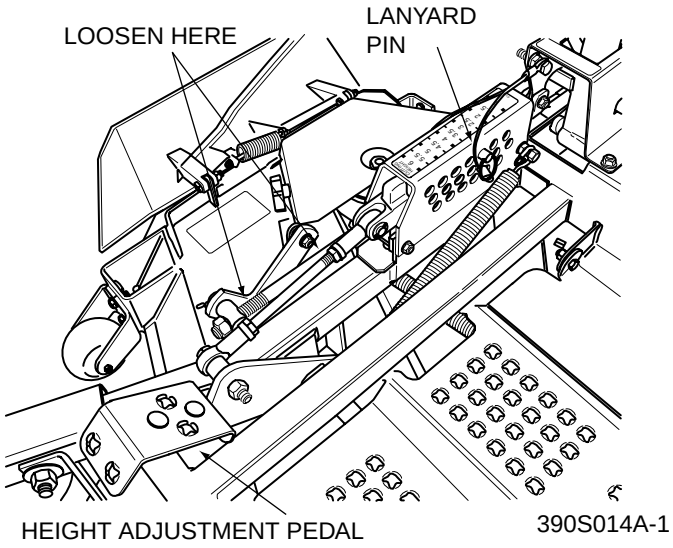


Figure 6-6. Cutter Deck Height Adjustment

2. Turn the control rod (See Figure 6.6) until there is a 1/4" space between the rear deck stop and the top of the cutter deck. (See Figure 6.7). Tighten the jam nuts on the control rod.

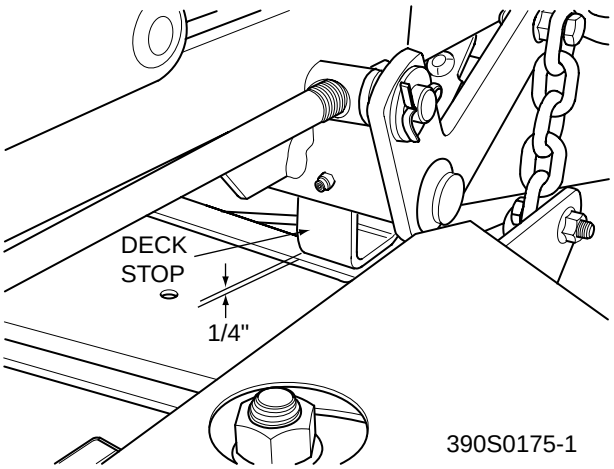


Figure 6-7. Cutter Deck Stop

3. Check the cutter deck cutting height by placing the lanyard pin in the 3" position on the cutting height index. Release the deck from the transport position and allow the deck to move to the 3" cutting height position.

4. Check the measurement from the floor to the cutter blade tip. If the measurement is not at 3", an adjustment can be made using the deck height control rod. (See Figure 6.6).

-NOTE-

If an adjustment had to be made, be sure that the cutter deck can easily be locked into the transport position.

Custom-Cut Baffle Adjustment

The Custom-Cut Baffle is designed to deliver optimum airflow and superior cutting performance in any type of grass. The Custom-Cut Baffle can be raised or lowered to precisely tailor the deck's performance for the type of grass being cut. The baffle can be set in three (3) different positions for optimum performance.

A. 3" Position - baffle removed. (See Figure 6.9). With the baffle removed, the Advantage cutter deck will deliver the best quality-of-cut in very tall, wiry, tough to cut grass.

B. 3-1/2" Position (factory setting) - baffle is installed using the bottom set of holes on the Custom Cut Baffle. (See Figure 6.10). For general purpose cutting, place the Custom Cut Baffle in the 3-1/2" position. This gives the best mix of cutting performance in all types of grass.

C. 4" Position - baffle is installed using the top set of holes on the Custom Cut Baffle. (See Figure 6.11). Placing the baffle in the 4" setting will enhance fall cutting (leaf pickup) and reduce cutter deck "blowout".

To adjust the Custom-Cut Baffle height:

1. Place the cutter deck in the transport position.

2. Remove the hardware securing the Custom-Cut Baffle to the cutter deck. (See Figure 6.8).

-NOTE-

Hardware location used in the illustrations are for reference only. Location of hardware may vary depending on cutter deck size.

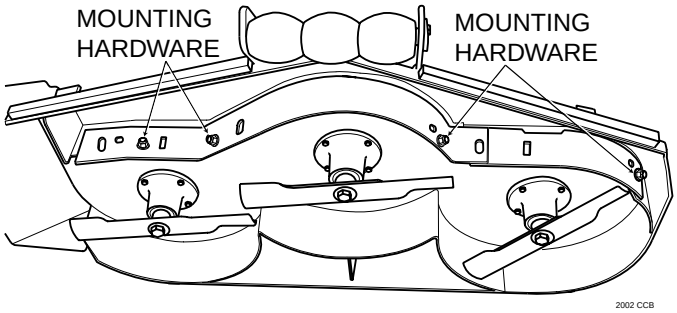


Figure 6-8. Custom Cut Baffle

3. Move the Custom-Cut Baffle to desired position. (See Figures 6.9 through 6.11 for position).

4. Reinstall the mounting hardware as shown. (See Figures 6.10 though 6.11). Torque hardware to 39ft.lbs.

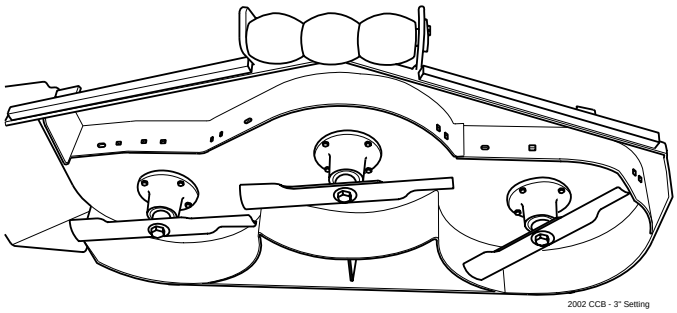


Figure 6-9. 3" Custom Cut Baffle Position

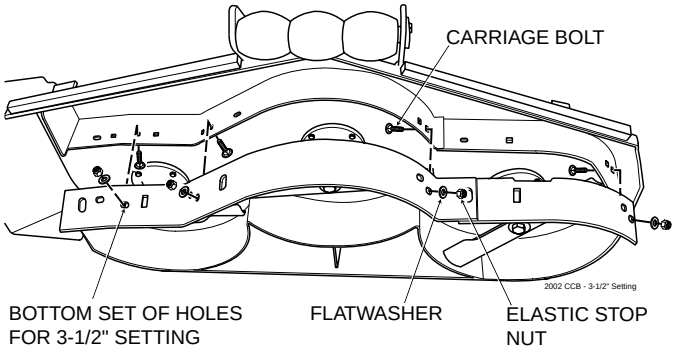


Figure 6-10. 3-1/2" Custom Cut Baffle Position

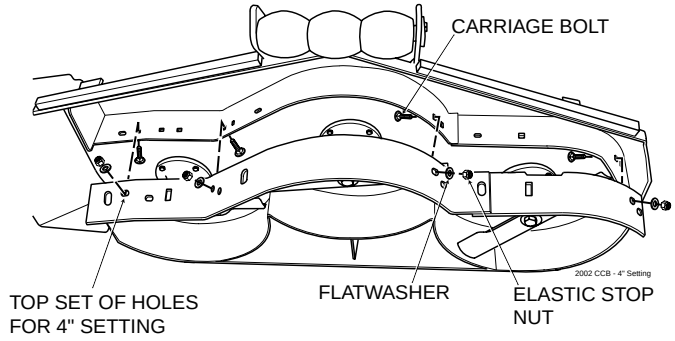


Figure 6-11. 4" Custom Cut Baffle Position

MAINTENANCE

7.1 MAINTENANCE CHART - RECOMMENDED SERVICE INTERVALS

HOURS						Procedure	Comments
Break-In (First 10)	8	40	100	200	500		
X						Check all hardware for tightness	
X						Check hydraulic oil level	See paragraph 7.3
X						Check all belts for proper alignment	See paragraph 7.8
X (First 5)						Change engine oil and filter	See paragraph 7.4
X						Check hydraulic hoses for leaks	Use extreme caution when checking the hydraulic hoses See paragraph 2.5
X						Check coolant level (Kawasaki only)	See paragraph 7.12
	X					Check engine oil level	See paragraph 7.4
	X					*Clean mower	See paragraph 7.13
	X					Check condition of blades	See paragraph 7.9
	X					Apply grease to fittings	See paragraph 7.2
	X					Check tire pressure	See paragraph 7.10
	X					Check coolant level (Kawasaki only)	See paragraph 7.12
		X				Check battery electrolyte level, clean battery posts and cables	See paragraph 7.7
		X				Check belts for proper alignment	See paragraph 7.8
			X			Apply grease to fittings	See paragraph 7.2
			X			Change engine oil	See paragraph 7.4
			X			*Clean air cleaner element	See paragraph 7.6
			X			Check lubricant in cutter deck gearbox	See paragraph 7.11

*** Perform these maintenance procedures more frequently under extreme dusty or dirty conditions**

MAINTENANCE CHART - RECOMMENDED SERVICE INTERVALS (CONT'D)

HOURS						Procedure	Comments
Break-In (First 10)	8	40	100	200	500		
				X		Apply grease to fittings	See paragraph 7.2
				X		Check hardware for tightness	
				X		Change engine oil filter	See paragraph 7.4
				X		Check hydraulic oil level	See paragraph 7.3
					X	Replace engine fuel filter	See paragraph 7.5
					X	Drain hydraulic system and replace hydraulic oil	See paragraph 7.3 Use SAE 20W50 Motor Oil
					X	Replace hydraulic oil filter	See paragraph 7.3
					X	Replace cutter deck gearbox lubricant	See paragraph 7.11
					X	Change coolant (Kawasaki only)	See paragraph 7.12

7.2 LUBRICATION - GREASE FITTING LUBRICATION CHART (SEE FIGURE 7-1, PAGE 27)

	LOCATION	LUBRICATION INTERVAL	LUBRICANT	NO. OF PLACES
1	Caster Wheel Pivot *	500 Hours/Yearly	Chassis Grease	2
2	Caster Wheel Bearings	100 Hours/Monthly	Chassis Grease	2
3	Brake Actuator	200 Hours/Monthly	Chassis Grease	2
4	Cutter Deck Bellcranks	100 Hours/Bi-Weekly	Chassis Grease	4
5	Cutter Deck Pusharms	100 Hours/Bi-Weekly	Chassis Grease	2
6	PTO Spindle	40 Hours/Weekly	+Lithium MP White Grease 2125	1
7	Cutter Deck Spindle	40 Hours/Weekly	+Lithium MP White Grease 2125	3
8	Brake Handle	200 Hours/Monthly	Chassis Grease	1
9	Cutter Deck Drive Shaft U-Joints	200 Hours/Monthly	Chassis Grease	2
10	Cutter Deck Drive Shaft Slip Sleeve	40 Hours/Weekly	Chassis Grease	1

* **PROCEDURE:** Remove grease cap, part number 481559. Remove plug, part number 482028-01, and install standard grease zerk (p/n 48114-06). Apply grease to the fitting until new grease appears at the top of the caster extension. Remove the grease zerk and reinstall the plug. Reinstall the grease cap. Special tool, part number 47007, is recommended for use in the installation of the grease cap.

\+ Compatible Greases: Mobilix #2 found at Mobil Service Stations
Ronex MP found at Exxon Service Stations
Super Lube MEP #2 & Super Stay-M #2 found at Conoco Stations
Shell Alvania #2 found at Shell Service Stations
Lidok EP #2 found at industrial shops

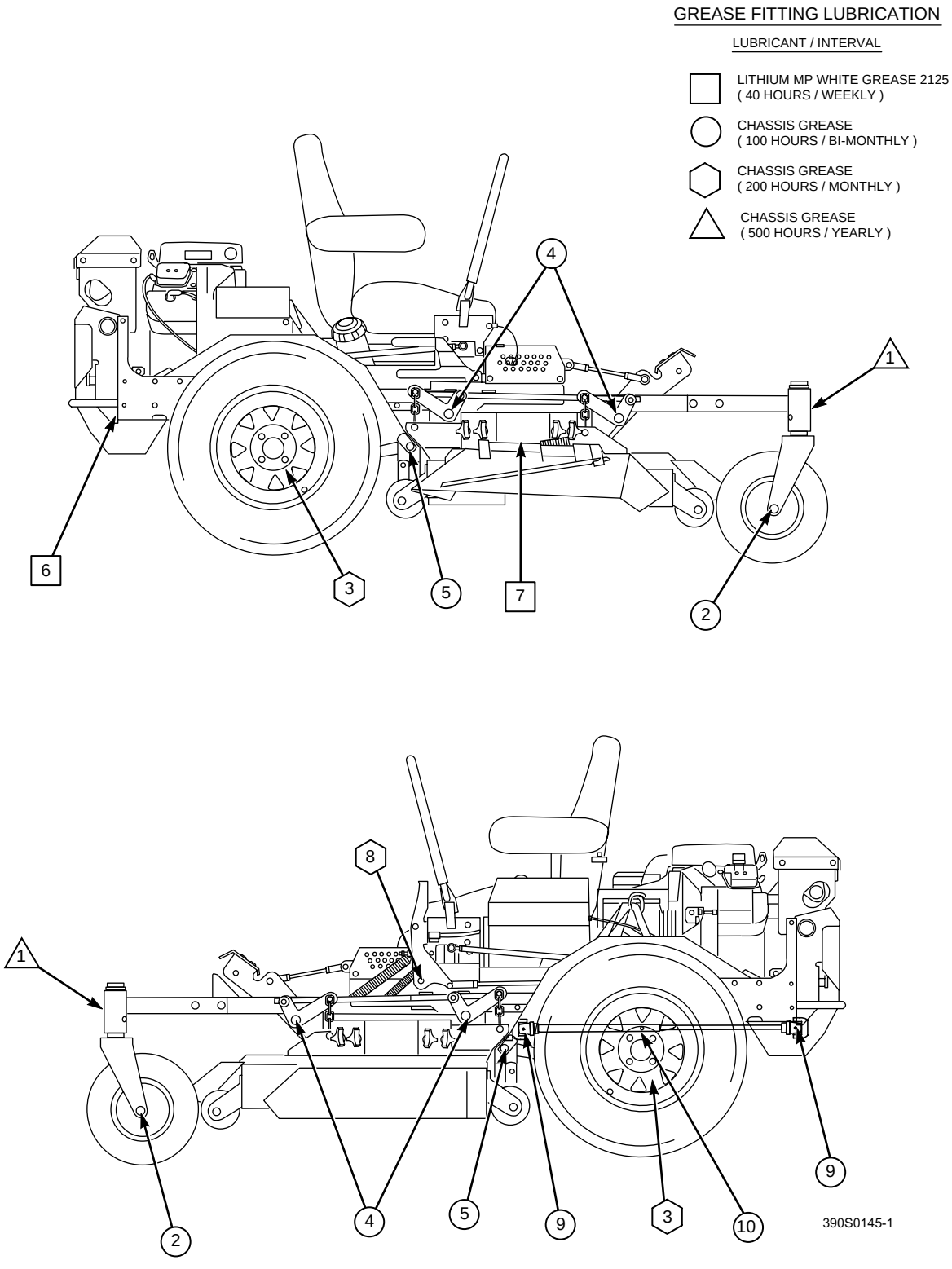


Figure 7.1 Lubrication Fitting Points

7.3 HYDRAULIC SYSTEM

A. Checking Hydraulic Oil Level

The hydraulic oil level should be checked after the first 10 hours of operation. Thereafter, check the oil after every 200 hours of machine operation or monthly, whichever occurs first.

-IMPORTANT-

If the oil level is consistently low, check for leaks and correct immediately.

1. Wipe dirt and contaminants from around the reservoir cap. Remove the cap from the hydraulic oil reservoir.

2. Visually check the level of hydraulic oil. Hydraulic oil must be at least 3" inches from top of the filler neck. If the level cannot be determined visually, use a clean tape measure to check the level. If the fluid is low, add 20W50 motor oil. DO NOT overfill; (overfilling the oil reservoir may cause oil seepage).

3. Clean the fill cap and install it onto the reservoir.

B. Changing Hydraulic Oil

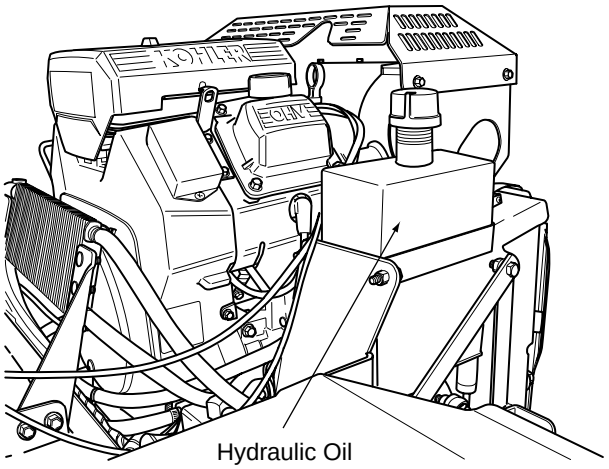


Figure 7-2 Hydraulic Oil Reservoir

The hydraulic oil should be changed after every 500 hours or annually, whichever occurs first. The oil should also be changed if the color of the fluid has become black or milky. A black color and/or a rancid odor usually indicates possible overheating of the oil, and a milky color usually indicates water in the hydraulic oil.

-NOTE-

The hydraulic oil should be changed if you notice the presence of water or a rancid odor to the hydraulic oil.

1. Park the mower on a level surface and stop the engine.

2. Place a suitable container under the hydraulic oil filter. Remove the fill cap from the reservoir. Remove the drain plug from the fitting on the oil filter base. (See Figure 7-2). Allow the fluid to drain into the container and properly discard it.

3. Re-install the drain plug into the fitting on the oil filter base and be sure it is tight.

-NOTE-

Before refilling the hydraulic oil reservoir the hydraulic oil filter should be changed as outlined in section C on the next page.

4. Fill the reservoir to 3" inches from the top of the filler neck with 20W50 motor oil.

5. Replace the reservoir fill cap. Start the engine and drive forward and backward for two minutes. Check the oil level in the reservoir. If necessary, add oil to the reservoir.

C. Changing Hydraulic Oil Filter Element

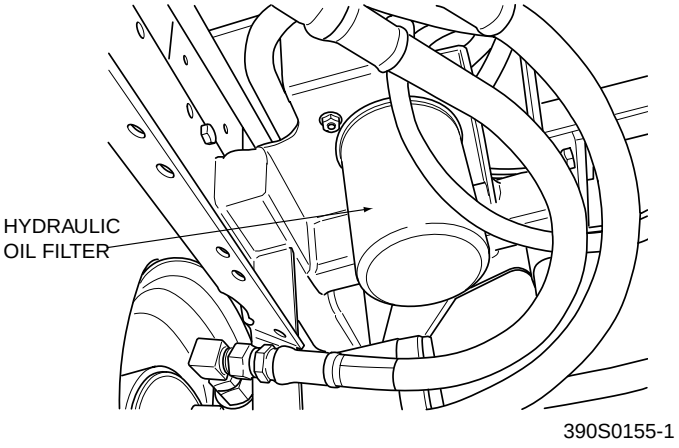


Figure 7-3 Hydraulic Oil Filter

The hydraulic oil filter should be changed after every 500 hours of operation or annually, whichever occurs first.

1. Remove the oil filter element (Figure 7-3) and properly discard it. Fill the new filter with clean oil and install the filter. Hand tighten only.

2. Run the engine at idle speed with the speed control lever in neutral for five minutes.

3. Check the oil level in the hydraulic tank. It must be 3" inches from the top of the filler neck. If necessary, add SAE 20W50 motor oil.

7.4 ENGINE OIL

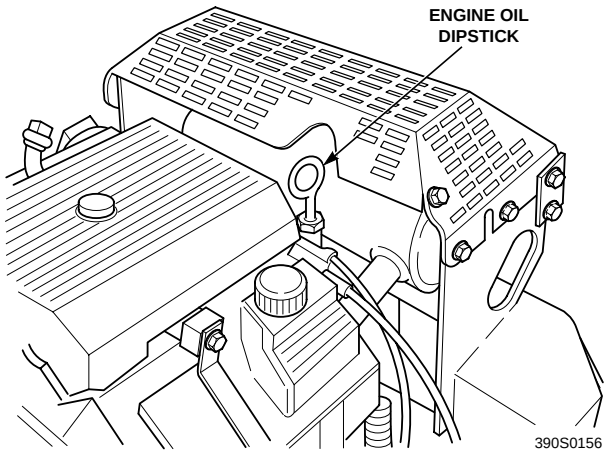


Figure 7-4 Engine Fill Stick

A. Checking Engine Crankcase Oil Level

The engine oil level should be checked after every 8 hours of operation or daily as instructed in the Engine Operator's Manual furnished with this mower.

B. Changing Engine Crankcase Oil

After the first 5 hours of operation, change the engine crankcase oil and replace the oil filter. Thereafter, change the engine crankcase oil after every 100 hours of operation or monthly, whichever occurs first. Refer to the Engine Operator's Manual furnished with this mower for instructions.

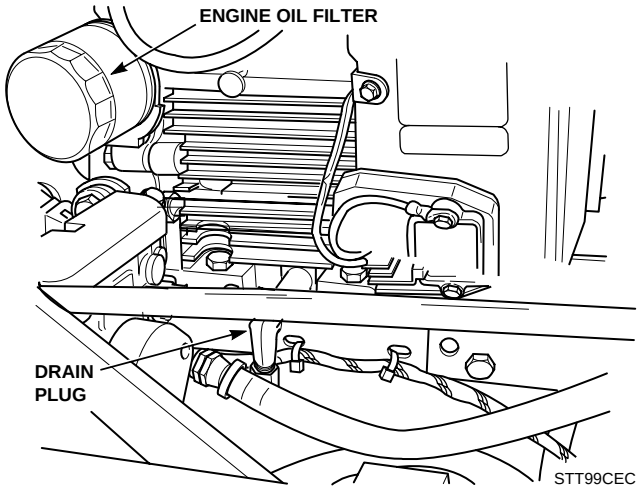


Figure 7-5 Drain Plug and Oil FilterLocation

C. Changing Engine Oil Filter

After the first 5 hours of operation, replace the engine oil filter. Thereafter, replace the oil filter after every 200 hours of operation or every month, whichever occurs first. Refer to Engine Operator's Manual for instructions.

7.5 ENGINE FUEL SYSTEM

⚠ DANGER:

To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.

A. Filling the Fuel Tank

Fill the fuel tank at the begining of each operating day to within 1 inch below the filler neck. Do not overfill. Use clean, fresh unleaded gasoline with a minimum octane rating of 87.

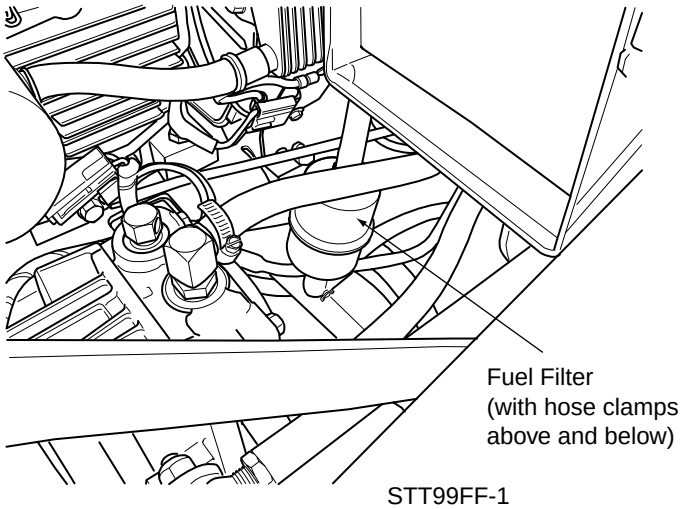


Figure 7-6 Fuel Filter

B. Replacing In-Line Fuel Filter Element

The in-line fuel filter (Figure 7-6) should be replaced after every 500 hours of operation or annually, whichever occurs first.

1. Close the shutoff valve. Remove the two clamps securing the fuel filter to the fuel hose. Remove the fuel filter.

2. Install a new fuel filter. Be sure it is installed in the proper direction. Secure to the fuel hose using the two clamps.

7.6 ENGINE AIR CLEANER

A. Cleaning and/or Replacing Air Cleaner Element

For any air cleaner, the operating environment dictates the air cleaner service periods. Inspect and clean the air cleaner element after every 100 hours of operation or monthly, whichever occurs first and replace the element if required.

-NOTE-

In extremely dusty conditions it may be necessary to check the element once or twice daily to prevent engine damage.

1. Remove the wing nut securing the air cleaner cover to the engine. Remove the air cleaner cover and set aside.

2. Remove the air cleaner and inspect.

3. Clean or replace the air cleaner and foam pre-cleaner as recommended by the engine manufacturer.

7.7 BATTERY

A. Checking Electrolyte Level and Cleaning Battery

After every 40 hours of operation or weekly, whichever occurs first, check the electrolyte level in the battery and clean the battery and connections. Dirt and fluid on the top of the battery can cause the battery to discharge. Corrosion of the battery terminals or loose connections will cause poor battery performance.

⚠WARNING:

Lead-acid batteries produce flammable and explosive gases. To avoid personal injury when checking, testing or charging batteries, DO NOT use smoking materials near batteries. Keep arcs, sparks and flames away from batteries. Provide proper ventilation and wear safety glasses.

1. Loosen the two plastic wing nuts and then remove the battery cover.

2. Remove the battery cell caps. Visually inspect electrolyte level in the cells. If electrolyte is below the bottom of vent well, fill with clean distilled water to the bottom of vent wells (1/4 to 1/2 inch above the plates). Install the battery cell caps.

   -IMPORTANT-

   Do not overfill the battery. Electrolyte will overflow through the vent tube onto parts of the machine, resulting in severe corrosion.

3. Clean the cable ends and battery posts with steel wool. Use a solution of baking soda and water to clean the battery. Do not allow the solution to enter the battery cells.

4. Tighten the cable connections securely and apply a light coat of silicone dielectric grease to the terminal connections to prevent corrosion.

5. Install the battery cover.

⚠WARNING:

Electric storage battery fluid contains sulfuric acid which is POISON and can cause SEVERE CHEMICAL BURNS. Avoid contact of fluid with eyes, skin, or clothing. Use proper protective gear when handling batteries. DO NOT tip any battery beyond 45° angle in any direction. If fluid contact does occur, follow first aid suggestions below.

BATTERY ELECTROLYTE FIRST AID

EXTERNAL CONTACT — Flush with water.

EYES — Flush with water for at least 15 minutes and get medical attention immediately.

INTERNAL — Drink large quantities of water. Follow with Milk Of Magnesia, beaten egg, or vegetable oil. Get medical attention immediately. In case of internal contact, DO NOT give fluids that would induce vomiting.

B. Charging the Battery

Refer to the battery charger's manual for specific instructions.

Under normal conditions the engine's alternator will have no problem keeping a charge on the battery. If the battery has been completely discharged for a long period of time, the alternator may not be able to recharge the battery, and a battery charger will be required.

DO NOT charge a frozen battery. It may explode and cause injury. Let the battery warm before attaching a charger.

Whenever possible, remove the battery from the mower before charging and make sure the electrolyte covers the plates in all cells.

⚠WARNING:

BATTERIES PRODUCE EXPLOSIVE GASES. Charge the battery in a well ventilated space so gases produced while charging can dissipate.

Charging rates between 3 and 50 amperes are satisfactory if excessive gassing or spewing of electrolyte does not occur or the battery does not feel excessively hot (over 125°F). If spewing or gassing occurs or the temperature exceeds 125°F, the charging rate must be reduced or temporarily stopped to permit cooling.

C. Jump Starting

1. The booster battery must be a 12 volt type. If a vehicle is used for jump starting, it must have a negative ground system.

2. When connecting the jumper cables, connect the positive cable to the positive battery post, then connect the negative cable to the negative battery post.

7.8 DRIVE BELTS

All drive belts are spring loaded and self-tensioning, however after the first 2, 4, 8 and 10 hours of operation, the belts should be checked for proper alignment and wear. Thereafter, check the belts after every 40 hours of operation or weekly, whichever occurs first.

7.9 CUTTER BLADES

A. Blade Inspection

1. Remove the ignition key before servicing the blades.

2. Raise the mower deck to the highest position. Place the lanyard pin in the highest cutting height positon to prevent the cutter deck from falling.

⚠WARNING:

Always wear proper hand and eye protection when working with cutter blades.

3. Check the cutter blades for straightness. If the cutter blades appear bent, they will need to be replaced.

⚠WARNING:

Do not attempt to straighten a bent blade, and never weld a broken or cracked blade. Always replace it with a original Scag cutter blade to assure safety.

4. If a blade cutting edge is dull or nicked, it should be sharpened. Remove the blades for sharpening. See "Blade Replacement."

-NOTE-

Keep the blades sharp. Cutting with dull blades not only yields a poor mowing job, but slows the cutting speed of the mower and causes extra wear on the engine and the blade drive.

B. Blade Sharpening

-NOTE-

If possible, use a file to sharpen the blade. Using a wheel grinder may burn the blade.

-NOTE-

DO NOT sharpen the blades beyond 1/3 of the width of the blade.

1. Sharpen the cutting edge at the same bevel as the original. See Figure 7-7. Sharpen only the top of the cutting edge to maintain sharpness.

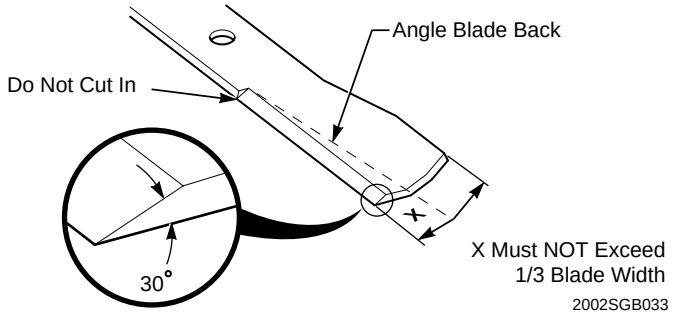


Figure 7-7 Blade Sharpening

2. Check the balance of the blade. If the blades are out of balance, vibration and premature wear can occur. See your authorized Scag dealer for blade balancing or special tools, if you choose to balance your own blades.

C. Blade Replacement

⚠ WARNING:

Always wear proper hand and eye protection when working with cutter blades.

1. Remove the ignition key before replacing the blades.

2. Raise the mower deck to the highest position. Place the lanyard pin in the highest cutting height positon to prevent the cutter deck from falling.

3. Secure the cutter blades to prevent them from rotating, (use the optional Blade Buddy tool, P/N 9212, to assist in securing the cutter blades), remove the nut from the blade attaching bolt. Remove the cutter blade, bolt and spacer from the spindle shaft. (Figure 7-8).

-NOTE-

The front of the machine will have to be raised slightly to remove the blade bolt from the cutter spindle.

4. To install the new cutter blade, put the flat washer onto the blade bolt and slide the bolt into the hole in the cutter blade.

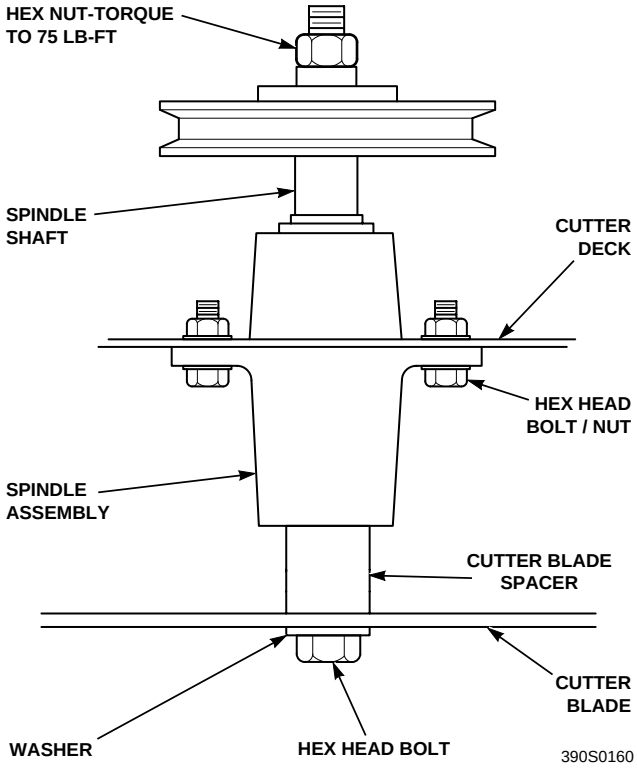


Figure 7-8 Blade Replacement

-NOTE-

Be sure that the blade is installed with the lift wing pointing toward the top of the deck.

5. Install the spacer onto the blade bolt and insert the bolt into the cutter spindle shaft.

6. Install the hex nut to the blade bolt at the top of the cutter spindle. Secure the blades from rotating and torque to 75 ft-lbs. (See Figure 7-8)

7.10 TIRES

Check the tire pressures after every 8 hours of operation or daily.

Caster Wheels ..... 25 PSI
Drive Wheels ..... 12 PSI

7.11 CUTTER DECK GEARBOX

A. Checking Lubricant Level

⚠ CAUTION:

The cutter deck gearbox can reach high operating temperatures. Allow the cutter deck gearbox to cool before servicing.

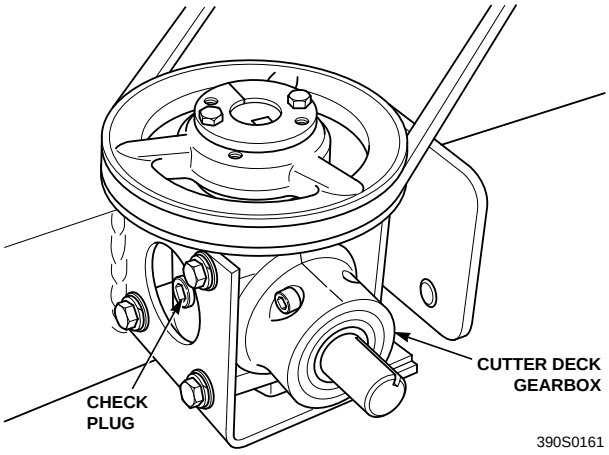


Figure 7-9 Cutter Deck Gearbox

The fluid level in the cutter deck gearbox (Figure 7-9) should be checked after every 100 hours of operation or bi-weekly, whichever occurs first.

1. Lower the cutter deck to to its lowest position to gain access to the cutter deck gearbox.

2. Clean and remove the check plug from the side of the gearbox (See Figure 7-9). Visually check that the lubricant level is up to the bottom edge of the check plug hole. If lubricant is low, add SAE 80W90 lubricant through the check plug hole in the gearbox until it is level with the bottom of the check plug hole. Install the check plug and tighten securely.

B. Changing Lubricant

The lubricant in the cutter deck gearbox should be changed after every 500 hours of operation or yearly, whichever occurs first.

1. Place a suitable container beneath the cutter deck gearbox and locate the gearbox drain plug.

2. Remove the drain plug, drain the lubricant into the container and properly discard it.

3. Re-install the drain plug and add SAE 80W90 lubricant through the check plug hole in the gearbox until it is level with the bottom of the check plug hole. Install the check plug and tighten securely.

7.12 KAWASAKI COOLING SYSTEM

⚠ WARNING:

To avoid burns, always allow the engine to cool before removing the radiator cap.

A. Checking Coolant Level

The coolant level should be checked before each day of operation.

1. Remove the radiator cap by turning it slowly counterclockwise to the first stop and allow any pressure to be released. Push down on the cap and turn counterclockwise to remove.

2. Visually check the coolant level. The coolant level should be up to the bottom of the filler neck as shown in figure 7-10. Add a mixture of coolant and soft water as needed.

-NOTE-

Refer to the coolant manuafacturer's instructions for the proper coolant mixture ratio.

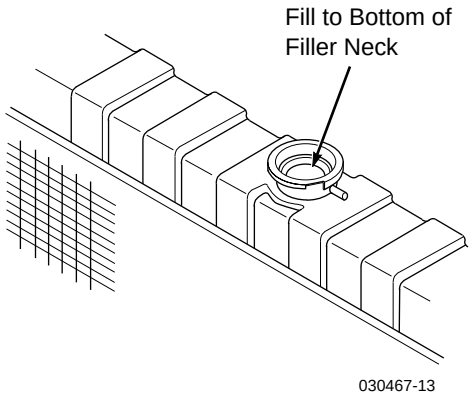


Figure 7-10 Coolant Level

3. Replace the radiator cap. Push down on the cap and turn clockwise until it stops.

-NOTE-

The cooling system should be flushed and the coolant replaced every 500 hours of operation or annually. See your Scag dealer for proper coolant replacement.

B. Cleaning the Radiator Debris Screen

After each day of operation, remove and clean the radiator debris screen.

⚠CAUTION:

To avoid personal injury, always wear safety glasses when using compressed air.

1. Pull the debris screen up to remove.

2. Clean the debris screen with compressed air or a water hose.

-NOTE-

Check the radiator for excessive debris and clean with compressed air. Never spray a hot engine with water, use only compressed air to remove debris.

3. Re-install the debris screen to the radiator.

C. Checking The Fan Belt Tension

Periodically check the fan belt tension. The belt should deflect 1/2" with 10 pounds of pressure. See your Scag dealer if the belt is in need of adjustment or replacement.

7.13 BODY, DECK, AND UPHOLSTERY

⚠CAUTION:

Do not wash any portion of the equipment while it is hot. Do not wash the engine; use compressed air.

1. After each use, wash the mower and cutter deck. Use cold water and automotive cleaners. Do not use pressure cleaners.

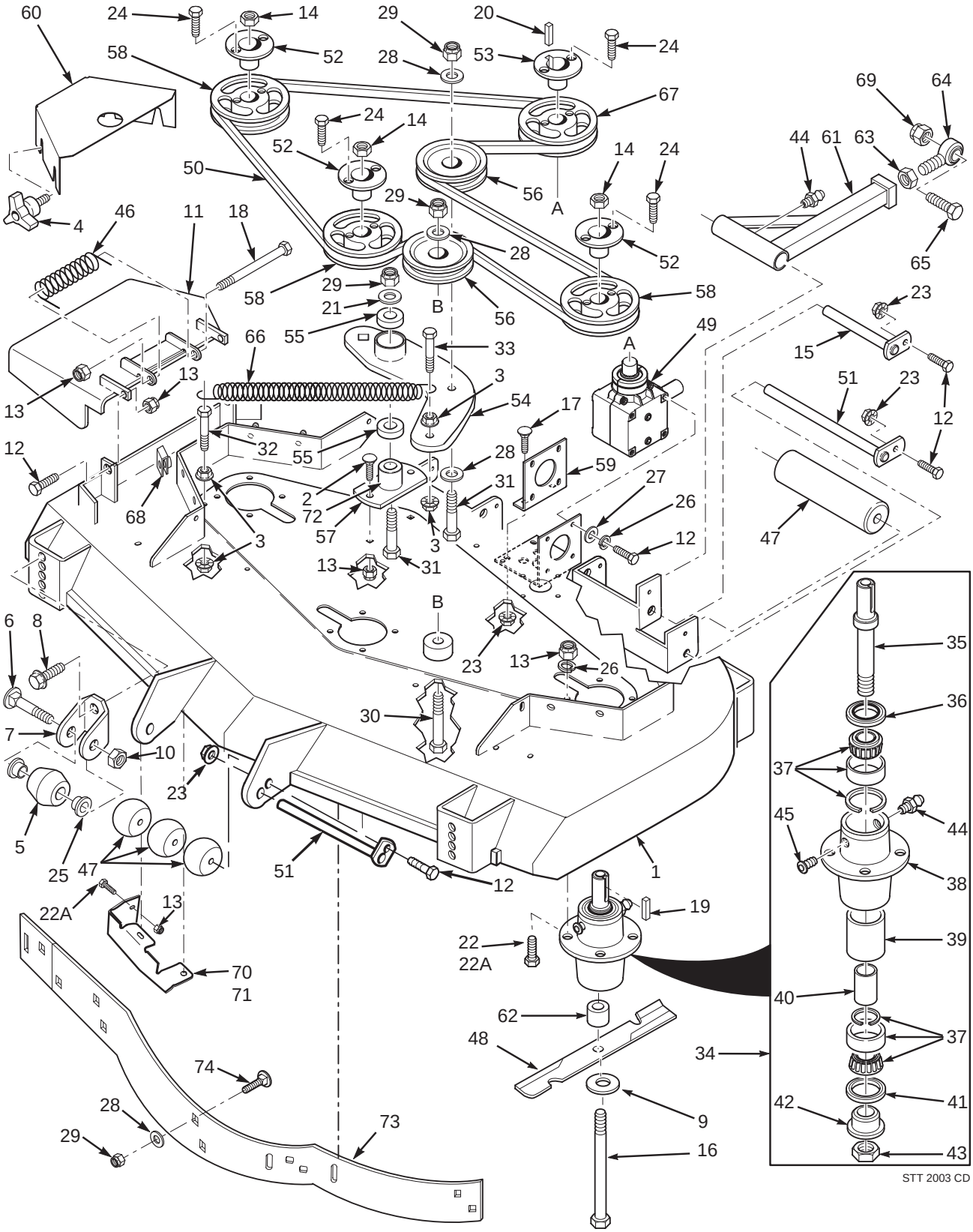
2. Do not spray electrical components.

3. Use a mild soap solution or a vinyl/rubber cleaner to clean the seat.

4. Repair damaged metal surfaces using Scag touch-up paint (P/N 48521) available from your authorized Scag dealer. Wax the mower for maximum paint protection.

NOTES

52A & 61A CUTTER DECKS

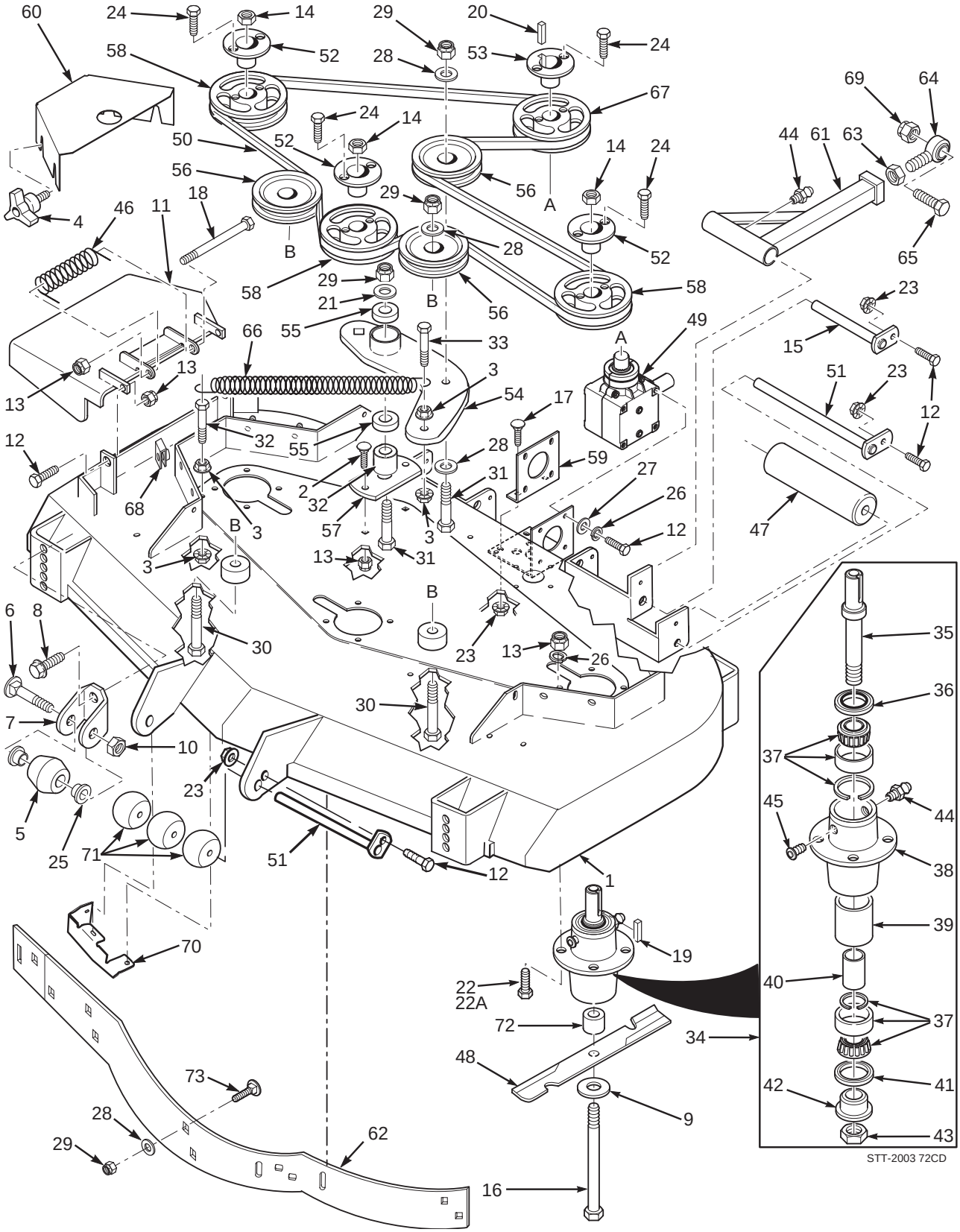


52A & 61A CUTTER DECKS

Ref. No.	Part No.	Description	52	61
1	461501	Cutter Deck Advantage	x	
	461505	Cutter Deck Advantage		x
2	04003-04	Bolt, Carriage 5/16-18 x 1"	x	x
3	04019-04	Nut, Hex Serrated Flange 3/8-16	x	x
4	481625-01	Wing nut, 3/8-16	x	x
5	481632	Anti-Scalp Wheel	x	x
6	04003-26	Bolt, Carriage 3/8-16 x 4"	x	x
7	422478	Anti-Scalp Wheel Bracket	x	x
8	04017-27	Bolt, Hex Serrated Flange 3/8-16 x 1"	x	x
9	04043-06	Flatwasher, 5/8" Hardened	x	x
10	04021-05	Locknut, 3/8-16 Center Lock	x	x
11	461295	Discharge Chute Advantage - Small	x	
	461296	Discharge Chute Advantage - Large		x
12	04001-11	Bolt, Hex Head 5/16-18 x 1-3/4" - Front	x	x
	04001-12	Bolt, Hex Head 5/16-18 x 1-1/2" - Rear		
13	04021-10	Nut, Hex Elastic Stop 5/16-18	x	x
14	04020-09	Nut, 5/8-11 UNC	x	x
15	451240	Push Arm Shaft	x	x
16	04001-41	Bolt, Hex Head 5/8-11 x 9-1/2"	x	x
17	04003-12	Bolt, Carriage 5/16-18 x 3/4"	x	x
18	04001-108	Bolt, Hex Head 5/16-18 x 4-1/2"	x	x
19	04063-08	Key, 1/4 x 1/4 x 2"	x	x
20	04063-01	Key, 1/4 x 1/4 x 1-1/4"	x	x
21	04043-04	Flatwasher,3/8-.39 x .938 x .105 HD	x	x
22	04001-10	Bolt, Hex Head 5/16-18 x 1-1/4"	x	x
22A	04001-11	Bolt, Hex Head 5/16-18 x 1-1/2"	x	x
23	04019-03	Nut, Hex Serrated Flange 5/16-18	x	x
24	04001-01	Bolt, Hex Head 1/2-20 x 3/4"	x	x
25	48100-15	Bushing, .376 I.D. Oilite	x	x
26	04030-03	Lockwasher, 5/16"	x	x
27	04040-15	Flatwasher, 5/16" (.375 x .875 x .083)	x	x
28	04041-07	Flatwasher, 3/8" (.391 x .938 x .105)	x	x
29	04021-09	Nut, Hex Elastic Stop 3/8-16	x	x
30	04001-62	Bolt, Hex Head 3/8-16 x 3-1/4"	x	x
31	04001-31	Bolt, Hex Head 3/8-16 x 2-1/2"	x	x
32	04001-20	Bolt, Hex Head 3/8-16 x 1-1/2"	x	x
33	04001-136	Bolt, Hex Head 3/8-16 x 1-1/2" Grade 8	x	x
34	46631	Spindle Assembly	x	x
35	43589	Spindle Shaft	x	x
36	481024	Seal, Top	x	x
37	481022	Bearing Assembly	x	x
38	43294	Spindle Housing	x	x
39	43312	Spacer, Outside	x	x
40	43296	Spacer, Inside	x	x
41	481025	Seal, Bottom	x	x
42	43297	Spindle Bushing, Bottom	x	x
43	481035	Nut, Special 1 - 1/16-18	x	x
44	48114-04	Grease Fitting	x	x
45	48677	Relief Fitting, Tapered Spindle	x	x
46	482245	Spring, Discharge Chute	x	x
47	482295	Wheel, Anti-Scalp	x	x
48	482462	Cutter Blade, 18"	x	
	482464	Cutter Blade, 21"		x
49	482486	Gearbox Assembly, Deck Drive	x	x
50	482281	Belt, Cutter Deck Drive	x	
	481558	Belt, Cutter Deck Drive		x
51	45944	Roller Shaft	x	x
52	48926	Tapered Hub, 1-1/8" Bore	x	x
53	48141	Tapered Hub, 1" Bore	x	x
54	461174	Idler Arm, Cutter Deck	x	x
55	48224	Bearings, Ball	x	x
56	482416	Pulley, Idler	x	x
57	422713	Base, Idler Pivot	x	x
58	48924	Pulley, 5.75 O.D. (52')	x	
	48753	Pulley, 6.75 O.D. (61")		x
59	422426	Mounting Plate, Gearbox	x	x
60	422412	Belt, Cover	x	
	422413	Belt, Cover		x
61	461516	Pusharm (incl. items 44, 62, 63 & 64)	x	x
62	43590	Spacer, Spindle Bottom	x	x
63	04020-16	Nut, Hex Head 5/8-18 UNF	x	x
64	48763	Rod End, 5/8" Male RH Thread	x	x
65	04001-79	Bolt, Hex Head 5/8-11 x 4-1/2"	x	x
66	481597	Spring, Cutter Deck	x	x
67	48967	Pulley, 6.95 O.D.	x	
	482480	Pulley, 6.75 O.D.		x
68	04110-03	U-Nut, 3/8-16	x	x
69	04021-13	Nut, Hex Elastic Stop 5/8-11	x	x
70	422600	Discharge Baffle 52"	x	
71	422601	Discharge Baffle 61"		
72	43503	Pivot, Idler - Short	x	x
73	451508	Baffle, Custom Cut 52A	x	
	451509	Baffle, Custom Cut 61A		x
74	04003-23	Bolt, Carriage 3/8-16 x 1"	x	x

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

72A CUTTER DECK

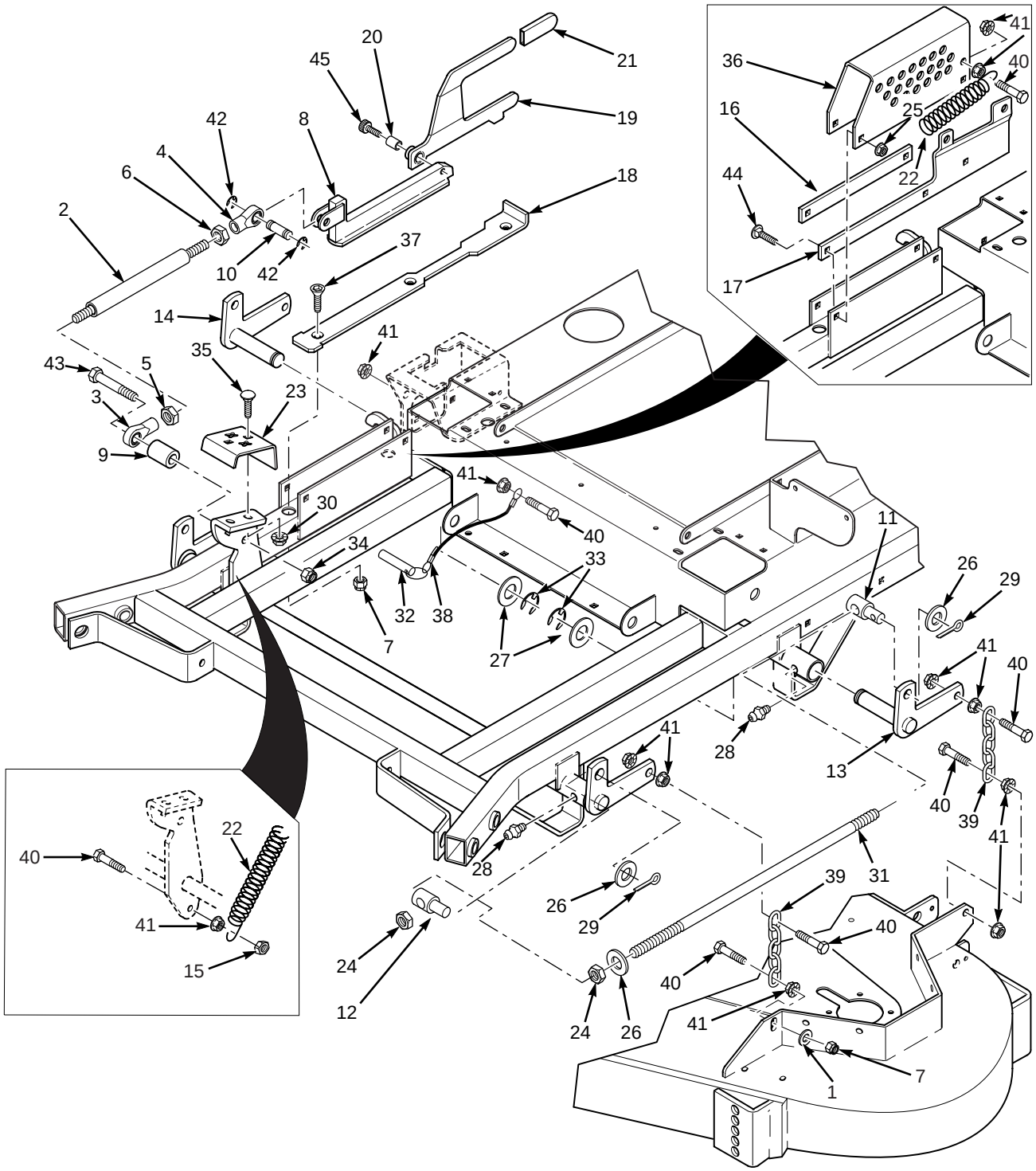


72A CUTTER DECK

Ref. No.	Part No.	Description
1	461507	Cutter Deck, 72” Advantage (Includes Decals)
2	04003-04	Bolt, Carriage 5/16-18 x 1"
3	04019-04	Nut, Hex Serrated Flange 3/8-16
4	481625-01	Wing Nut, 3/8-16
5	481632	Anti-Scalp Wheel
6	04003-26	Bolt, Carriage 3/8-16 x 4"
7	422478	Anti-Scalp Wheel Bracket
8	04017-27	Bolt, Hex Serrated Flange 3/8-16 x 1"
9	04043-06	Flatwasher, 5/8" Hardened
10	04021-05	Locknut, 3/8-16 Center Lock
11	461296	Discharge Chute, 61” & 72” Adv.
12	04001-12	Bolt, Hex Head 5/16-18 x 1.75" (Front)
	04001.11	Bolt, Hex Head 5/16-18 x 1.50” (Rear)
13	04021-10	Nut, Hex Elastic Stop 5/16-18
14	04020-09	Nut, 5/8-11 UNC
15	451240	Push Arm Shaft
16	04001-41	Bolt, Hex Head 5/8-11 x 9.50"
17	04003-12	Bolt, Carriage 5/16-18 x .75"
18	04001-154	Bolt, Hex Head 5/16-18 x 4.75"
19	04063-08	Key, 1/4 x 1/4 x 2"
20	04063-01	Key, 1/4 x 1/4 x 1.25"
21	04043-04	Flatwasher,3/8-.39 x .938 x .105 HD
22	04001-11	Bolt, Hex Head 5/16-18 x 1.50"
22A	04001-12	Bolt, Hex Head 5/16-18 x 1.75”
23	04021-10	Nut, Hex Serrated Flange 5/16-18
24	04001-01	Bolt, Hex Head 1/2-20 x .75"
25	48100-15	Bushing, .376 I.D. Oilite
26	04030-03	Lockwasher, 5/16"
27	04040-15	Flatwasher, 5/16" (.375 x .875 x .083)
28	04041-07	Flatwasher, 3/8" (.391 x .938 x .105)
29	04021-09	Nut, Hex Elastic Stop 3/8-16
30	04001-62	Bolt, Hex Head 3/8-16 x 3.25"
31	04001-31	Bolt, Hex Head 3/8-16 x 2.50"
32	43503	Pivot, Idler - Short
33	04001-136	Bolt, Hex Head 3/8-16 x 1.50" Grade 8
34	46631	Spindle Assembly
35	43589	Spindle Shaft
36	481024	Seal, Top
37	481022	Bearing Assembly
38	43294	Spindle Housing
39	43312	Spacer, Outside
40	43296	Spacer, Inside
41	481025	Seal, Bottom
42	43297	Spindle Bushing, Bottom
43	481035	Nut, Special 1 - 1/16-18
44	48114-04	Grease Fitting
45	48677	Relief Fitting, Tapered Spindle
46	482245	Spring, Discharge Chute
47	48038	Guide, Roller
48	482002	Cutter Blade, 24.5" 72”
49	482486	Gearbox Assembly, Deck Drive
50	481980	Belt, Cutter Deck Drive, 72”
51	45944	Roller Shaft
52	48926	Tapered Hub, 1-1/8" Bore
53	48141	Tapered Hub, 1" Bore
54	461174	Idler Arm, Cutter Deck
55	48224	Bearings, Ball
56	482416	Pulley, Idler
57	422713	Base, Idler Pivot
58	48967	Pulley, 6.95 O.D. - 72”
59	422426	Mounting Plate, Gearbox
60	422677	Belt Cover, LH - 72”
	422708	Belt Cover, RH - 72”
61	461516	Pusharm (includes items 44, 62, 63 & 64)
62	451510	Baffle, Custom Cut 72A
63	04020-16	Nut, Hex Head 5/8-18 UNF
64	48763	Rod End, 5/8" Male RH Thread
65	04001-79	Bolt, Hex Head 5/8-11 x 4-1/2"
66	481597	Spring, Cutter Deck
67	48753	Pulley, 6.35 O.D. - 72”
68	04110-03	U-Nut, 3/8-16
69	04021-13	Nut, Hex Elastic Stop 5/8-11
70	422602	Discharge Baffle 72”
71	482295	Wheel, Anti-Scalp
72	43590	Spacer, Spindle Bottom
73	04003-23	Bolt, Carriage 3/8-16 x 1”

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

CUTTER DECK CONTROLS



CUTTER DECK

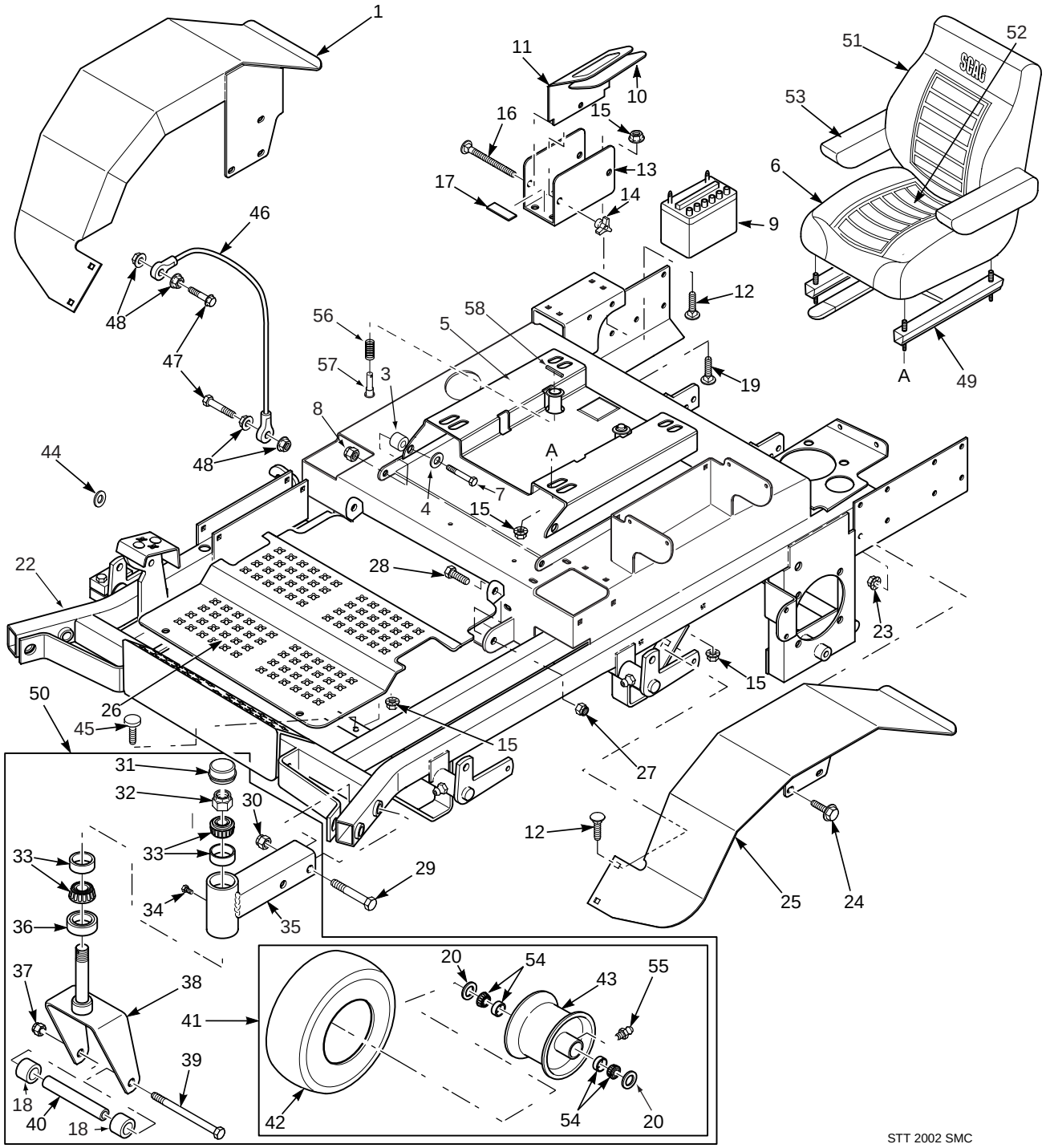
STT2002CDC

CUTTER DECK CONTROLS

Ref. No.	Part No.	Description
1	04041-07	Flatwasher, 3/8”
2	481764	Link, Deck Lift
3	481765	Rod End, Female - 1/2-20 RH
4	481766	Rod End, Female - 1/2-20 LH
5	04020-27	Nut, Jam 1/2-20 RH
6	04020-28	Nut, Jam 1/2-20 LH
7	04021-09	Nut, 3/8-16 Elastic Stop
8	482429	Slide Weldment, Height Adjustment
9	43391	Spacer, Decklift Pedal
10	43487	Pin, Decklift
11	43526	Swivel Joint, LH
12	43527	Swivel Joint, RH
13	45904	Bellcrank Weldment, LH Rear
14	45905	Bellcrank Weldment, RH Rear
15	04021-05	Locknut, 3/8-16 Center Lock
16	422381	Guide, Short
17	423509	Guide, Long
18	422346	Lockplate, Decklift
19	46975	Deck Latch (Includes items 20& 21)
20	48100-14	Bushing, .502 ID.
21	481428	Grip, Deck Latch
22	481598	Spring, Helper (61” & 72” Cutter Decks Only)
23	422451	Foot Pedal, Height Adjustment
24	04020-09	Nut, Hex 5/8-11
25	04019 -03	Nut, Hex Serrated Flange 5/16-18
26	04040-09	Flatwasher, 5/8" (.656 x 1.312 x .095)
27	04041-14	Flatwasher, 1" (1.062 x 1.50 x .048)
28	48114-04	Grease Fitting
29	04061-07	Cotter Pin, 3/16 x 1”
30	04021-10	Nut, Hex Elastic Stop 5/16-18
31	04004-44	Stud, 5/8-11 x 22.0"
32	04067-09	Ring Pin, 1/2 x 3.06"
33	04050-08	Ring, Retaining 1" External "E"
34	04021-07	Nut, Hex Elastic Stop 1/2-13
35	04003-11	Bolt, Carriage 3/8-16 x 1-1/4"
36	423463	Bracket, Cutting Height Adjustment
37	04014-03	Screw, Cap 5/16-18 x 3" FHHS
38	481547	Lanyard, Deck Height Pin
39	48540	Chain
40	04001-20	Bolt, Hex Head 3/8-16 x 1-1/2"
41	04019-04	Nut, Hex Serrated Flange 3/8-16
42	04050-10	Ring, Retaining 1/2" External "E"
43	04001-74	Bolt, Hex Head 1/2-13 x 3"
44	04003-04	Bolt, Carriage 5/16-18 x 1"
45	04009-02	Bolt, Shoulder 1/2 x 3/4"

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

SHEET METAL COMPONENTS

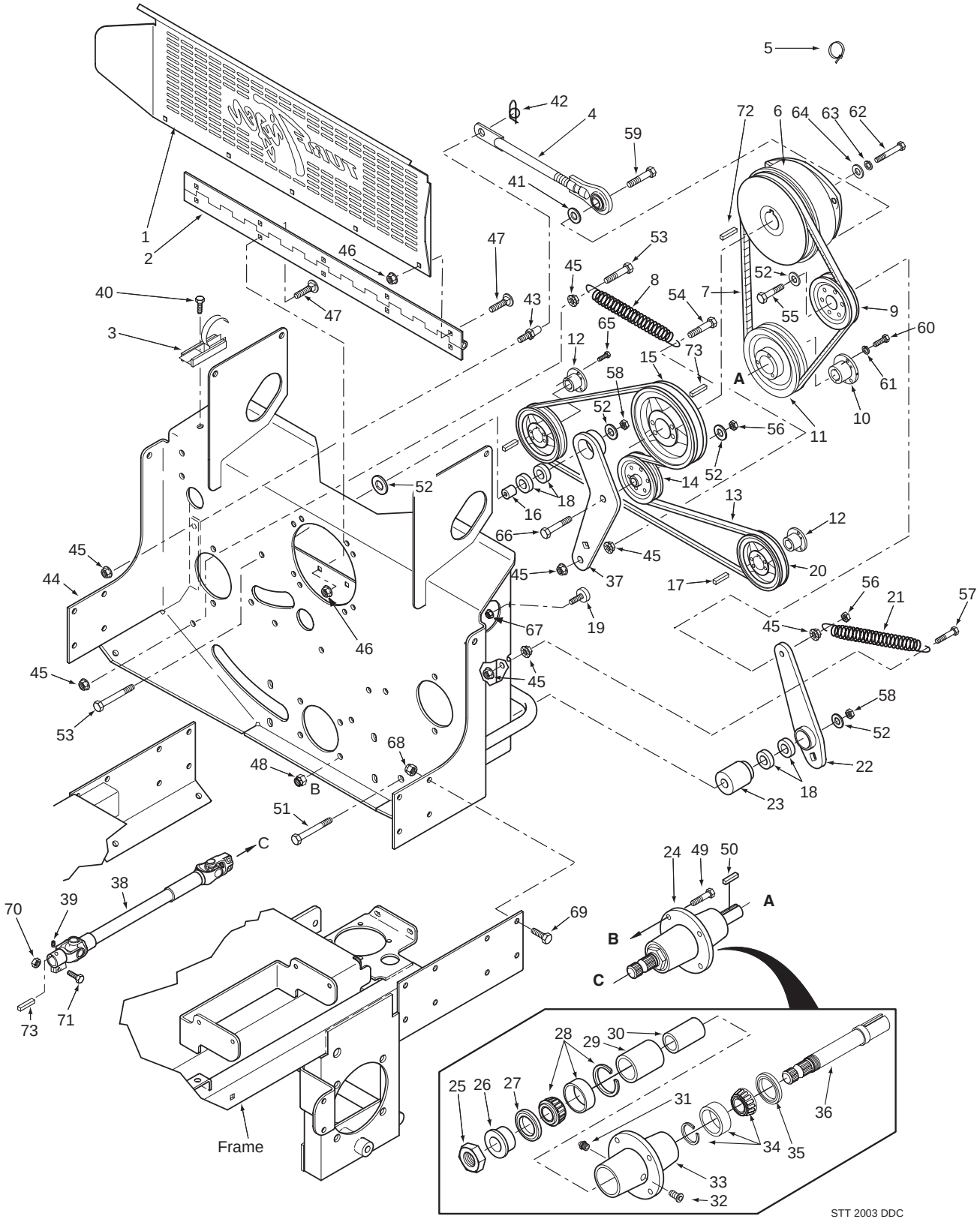


SHEET METAL COMPONENTS

Ref. No.	Part No.	Description
1	451481	Fender Weldment, RH
2	04001-09	Bolt, Hex Head, 5/16-18 x 1, Zinc
3	43606	Spacer
4	04041-07	Flatwasher, 3/8-.391 x .938 x .105
5	451448	Seat Plate Weldment
6	482597	Seat Assembly w/armrest
7	04001-45	Bolt, Hex Head 3/8-16 x 2.0”
8	04021-09	Nut, Elastic Stop 3/8-16
9	48015	Battery
10	48903	Pad, Battery Cover
11	421274	Cover, Battery
12	04003-12	Bolt, Carriage 5/16-18 x 3/4"
13	423308	Plate, Battery Box
14	04029-01	Wing Nut, 1/4-20 x 3/4"
15	04019-03	Nut, Hex Serrated Flange 5/16-18
16	04003-01	Bolt, Carriage 1/4-20 x 6"
17	48661	Rubber Pad
18	43584	Spacer, Caster Wheel
19	04003-04	Bolt, Carriage 5/16-18 x 1"
20	482622	Seal
21	04021-09	Lock Nut, 3/8-16, Elast. Stop
22	461520	Main Frame
23	04019-04	Nut, Hex Serrated Flange 3/8-16
24	04017-27	Screw, Hex Serrated Flange 3/8-16 x 1”
25	451480	Fender Weldment, LH
26	423489	Foot Plate
27	04021-09	Nut, Hex Elastic Stop 3/8-16
28	04001-19	Bolt, Hex Head 3/8-16 x 1”
29	04001-125	Bolt, Hex Head 5/8-11 x 4”
30	04021-13	Nut, Hex Elastic Stop 5/8-11
31	481559	Cap, Grease
32	04021-20	Nut, Hex Elastic Stop 1.0-14
33	481657	Bearing W/Race
34	482028-01	Plug, 1/4-28 THD Form
35	451449	Extention Weldment, Caster 52A (LH)
	451450	Extention Weldment, Caster 52A (RH) & 61A (LH)
	451451	Extention Weldment, Caster 61A (RH)
	451452	Extention Weldment, Caster 72A (LH)
	451453	Extention Weldment, Caster 72A (RH)
36	481025	Seal, 2.00 OD. x 1.625 Bore
37	04021-07	Nut, Hex Elastic Stop 1/2-13
38	45934	Yoke Weldment, Caster (52A)
	451416	Yoke Weldment, Caster (61A & 72A)
39	04001-134	Bolt, Hex Head 1/2-13 x 7-1/2" (52A)
	04001-167	Bolt, Hex Head 1/2-13 x 9-1/2” (61A & 72A)
40	43581	Sleeve, Caster Wheel (52A)
	43583	Sleeve, Caster Wheel (61A, 72A)
41	482503	Wheel Assy, 52A (Inc.items 20, 42, 43, 54, 55)
	482504	Wheel Assy, 61A, 72A (Inc.items 20, 42, 43, 54, 55)
42	481613	Tire, 13 x 5.00 4-Ply (52A)
	482619	Tire, 13 x 6.50 4-Ply (61A, 72A)
43	482625	Rim Assembly, 52A (Includes item 55)
	482620	Rim Assembly, 61A & 72A (Inc. item 55)
44	04041-07	Flatwasher, 3/8”-.391 x .938 x .105
45	481284	Bumper, Rubber
46	48566	Cable, Seat Stop
47	04001-59	Bolt, Hex Head 1/4-20 x 1-1/4"
48	04019-02	Nut, Hex Serrated Flange 1/4-20
49	482502	Seat Adjustment, Track Set
50	461453	Caster Wheel Assy (Inc. 31 thru 43) 52A (RH)
	461446	Caster Wheel Assy (Inc. 31 thru 43) 52A (LH)
	461447	Caster Wheel Assy (Inc. 31 thru 43) 61A (LH)
	461448	Caster Wheel Assy (Inc. 31 thru 43) 61A (RH)
	461449	Caster Wheel Assy (Inc. 31 thru 43) 72A (LH)
	461450	Caster Wheel Assy (Inc. 31 thru 43) 72A (RH)
51	482614	Back Cushion Cover
52	482615	Seat Cushion Cover
53	482618	Arm Rest, Right Hand
	482617	Arm Rest, Left Hand
	482616	Arm Rest Cover
54	482621	Bearing w/ Race
55	48114-07	Grease Fitting
56	481389	Spring, Seat
57	43462	Pin Retainer, Spring
58	04060-01	Roll Pin, Spring 5/32 x 3/4”

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

DECK DRIVE COMPONENTS

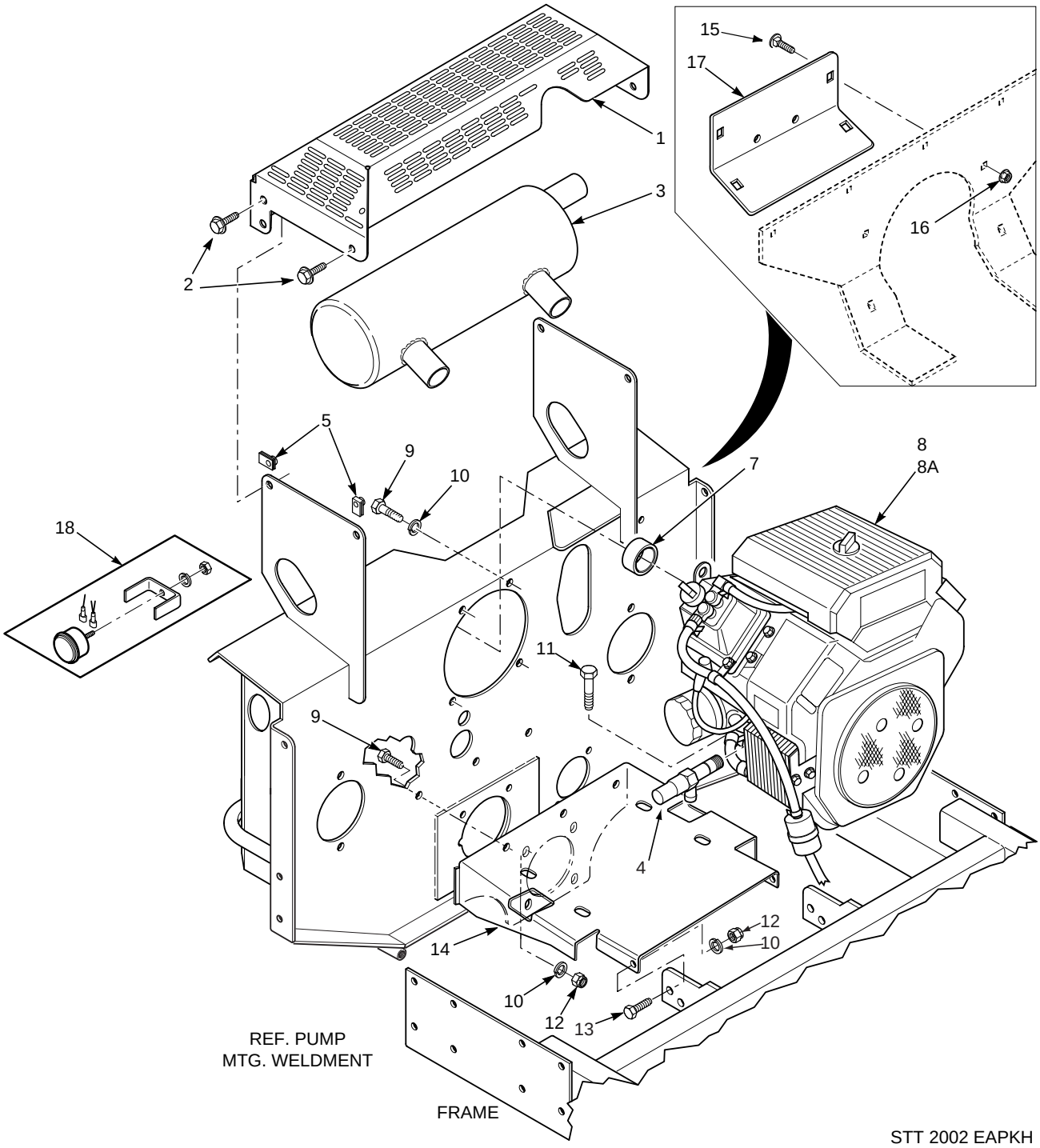


DECK DRIVE COMPONENTS

Ref. No.	Part No.	Description
1	423529	Belt Guard, Rear
2	481531	Hinge, Belt Guard
3	481309	Latch, Hood
4	482554	Rod Assembly, Clutch Anti-Rotation
5	48030-09	Clamp, Cable
6	461716	Clutch, Ogura GT-3
7	481460	Belt, Deck Drive
8	482658	Spring, Transmission Idler
9	48181	Pulley, Idler 5" Dia.
10	481536	Tapered Hub, 1" Bore
11	481398	Pulley, 6.35 Tapered Bore
12	481884	Tapered Hub, 17mm Bore
13	482641	Belt, Pump Drive STT
14	482655	Pulley, Idler 4" Dia.
15	482670	Pulley, 4.45 Dia. - 1.125 Bore
16	43631	Spacer, Idler Bearing
17	04063-14	Key, 5.0 x 5.0 x 25mm
18	48224	Ball Bearing
19	481284	Bumper, Rubber
20	481883	Pulley, 6.25 OD Tapered Bore
21	482667	Spring, PTO
22	461609	Idler Arm Weldment, PTO Drive
23	43632	Pivot, Idler PTO
24	46977	Spindle Assembly, Deck Drive
25	481035	Nut, 1.06-18 Thread
26	43297	Spindle Bushing, Bottom
27	481025	Seal, 2.0 OD x 1.625 Bore
28	481022	Roller Bearing Tapered
29	43312	Spacer, Outside
30	43296	Spacer, Inside
31	48114-04	Grease Fitting, 1/4-28
32	48677	Relief Fitting
33	43294	Spindle Housing
34	481022	Roller Bearing Tapered
35	481024	Seal, 2.0 OD x 1.5 Bore
36	43321	Shaft, Deck Drive
37	461608	Idler Arm Weldment, Pump Drive
38	482424	Driveshaft (Air Cooled Engine)
	482438	Driveshaft (Liquid Cooled Engine)
39	04012-08	Set Screw, 3/8-16 x 3/4" Torx Socket
40	04011-11	Screw, #10-32 x .56
41	04041-07	Flatwasher, 3/8-.391 x .938 x .105
42	04069-01	Pin, Rue Cotter 3/8 Dia.
43	43507	Stud, Anti Rotation
44	451573	Pump Mounting Plate Weldment (Air Cooled)
	451574	Pump Mounting Plate Weldment (Liquid Cooled)
45	04019-04	Nut, Serrated Flange 3/8-16
46	04019-02	Nut, Serrated Flange 1/4-20
47	04003-07	Bolt, Carriage 1/4-20 x 1/2"
48	04021-10	Nut, Elastic Stop 5/16-18
49	04001-12	Bolt, Hex Head 5/16-18 x 1-3/4"
50	04063-06	Key, 1/4 x 1/4 x 1-1/2"
51	04001-171	Bolt, Hex Head 3/8-16 x 4-1/2" Grade 8 Black
52	04043-04	Washer, 3/8 Hardened
53	04001-135	Bolt, Hex Head 3/8-16 x 1-3/4" Grade 8 Black
54	04001-136	Bolt, Hex Head 3/8-16 x 1-1/2" Grade 8 Black
55	04001-170	Bolt, Hex Head 3/8-16 x 2-1/2" 1.5 Thread Grd.8
56	04021-05	Nut, Center Lock 3/8-16
57	04001-136	Bolt, Hex Head 3/8-16 x 1-1/2" Grade 8 Black
58	04021-09	Nut, Elastic Stop 3/8-16
59	04001-45	Bolt, Hex Head 3/8-16 x 2"
60	04001-109	Bolt, Hex Head 1/4-20 x 1-3/8"
61	04030-02	Lockwasher, 1/4 Spring
62	04001-101	Bolt, Hex Head 7/16-20 x 2-1/2" UNF
63	04030-05	Lockwasher, 7/16 Spring
64	04041-28	Flatwasher, 7/16-.469 x 1.75 x .25
65	04001-01	Bolt, Hex Head 1/4-20 x 3/4"
66	04001-21	Bolt, Hex Head 3/8-16 x 1-3/4"
67	04019-03	Nut, Serrated Flange 5/16-18
68	04021-09	Nut, Elastic Stop 3/8-16
69	04001-19	Bolt, Hex Head 3/8-16 x 1"
70	04021-05	Nut, Center Lock 3/8-16
71	04001-21	Bolt, Hex Head 3/8-16 x 1-3/4"
72	04063-02	Key, 1/4 x 1/4 x 2-1/4"
73	04063-20	Key, 1/4 x 1/4 x 1"

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

ENGINE AND ATTACHING PARTS - KOHLER



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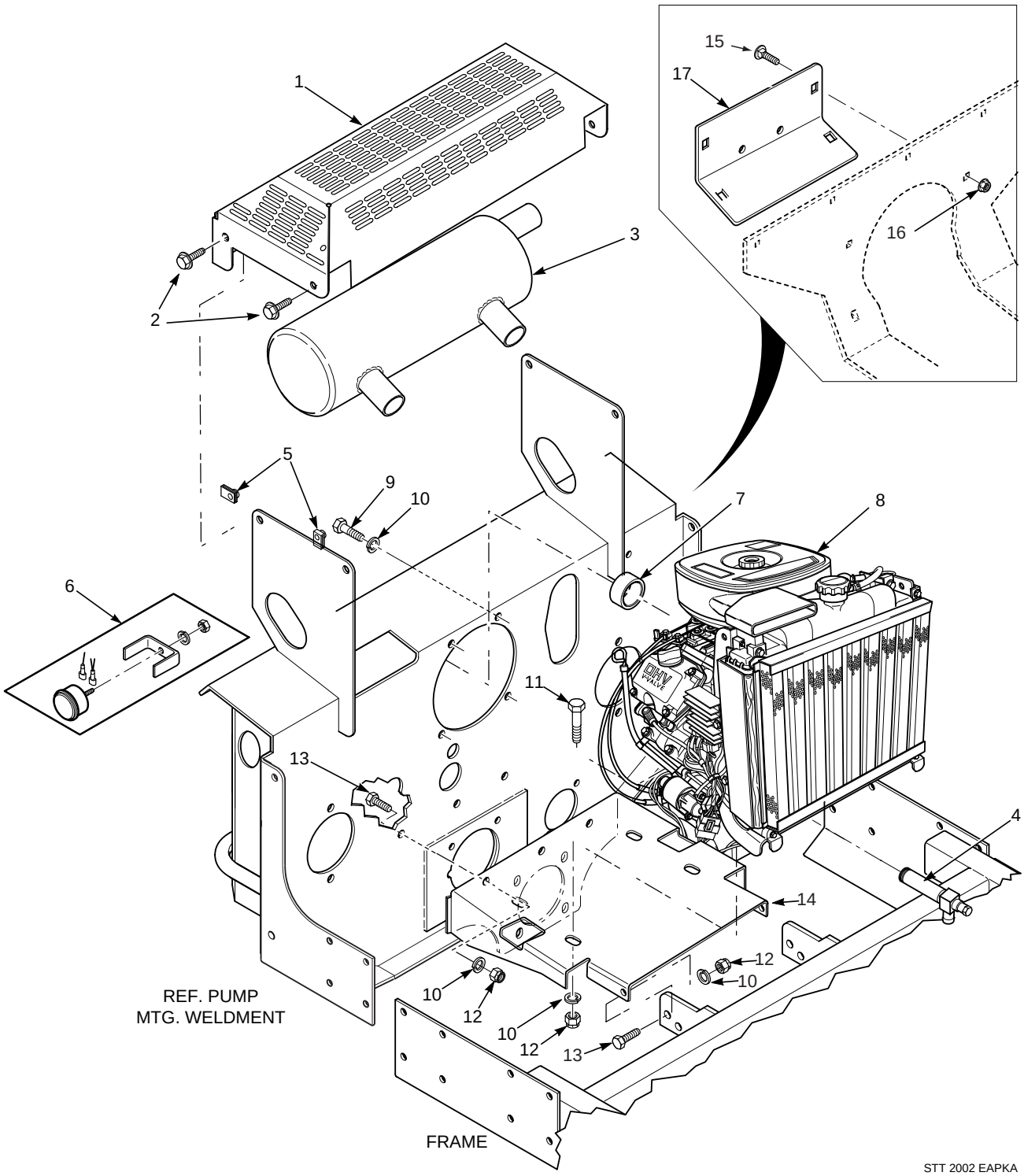
ENGINE AND ATTACHING PARTS - KOHLER

Ref. No.	Part No.	Description
1	422593	Muffler Guard
2	04017-05	Screw, Hex Serrated Flange 1/4-20 x 3/4"
3	*	Muffler, Part Of Engine (Available only through Kohler)
4	482510	Oil Drain Extension
5	04110-01	U-Nut, 1/4-20
6	481584	Exhaust Elbow
7	43603	Spacer, Engine (Kohler)
8	482680	Engine, Kohler 25 CH (Available only through Kohler, Eng. Spec. PS-CH730-0066)
	482681	Engine, Kohler 27 CH (Available only through Kohler, Eng. Spec. PS-CH740-0021)
9	04001-19	Bolt, Hex Head 3/8-16 x 1"
10	04030-04	Lockwasher, 3/8" Spring
11	04001-21	Bolt, Hex Head 3/8-16 x 1-3/4"
12	04021-09	Nut, Hex Elastic Stop 3/8-16
13	04001-32	Bolt, Hex Head 3/8-16 x 1-1/4"
14	451459	Plate, Engine Mounting
15	04003-12	Bolt, Carriage 5/16-18 x 3/4"
16	04019-03	Nut, Hex Serrated Flange 5/16-18
17	423550	Rear Cover
18	48023	Hour Meter

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

ENGINE AND ATTACHING PARTS - 23HP, 27HP & 29HP-DFI KAWASAKI

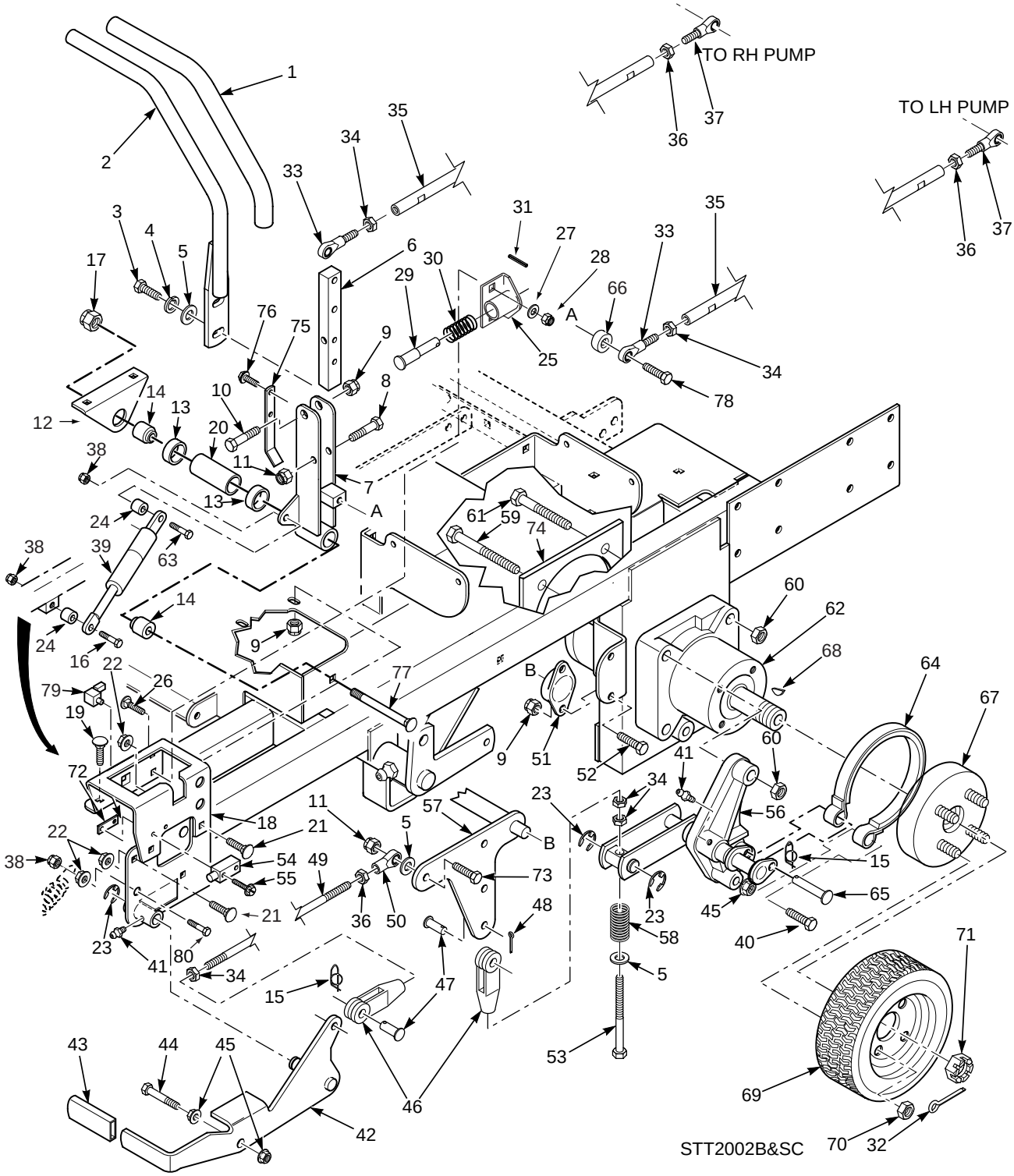


ENGINE AND ATTACHING PARTS - 23HP, 27HP & 29HP-DFI KAWASAKI

Ref. No.	Part No.	Description
1	451378	Muffler Guard
2	04017-05	Screw, Hex Serrated Flange 1/4-20 x 3/4"
3	482699	Muffler
4	482351	Extension, Oil Drain
5	04110-01	U-Nut, 1/4-20
6	48023	Hour Meter
7	43603	Spacer, Engine (Kawasaki)
8	482410	Engine, Kawasaki 23KA (Available only through Kawasaki)
	482271	Engine, Kawasaki 27KA (Available only through Kawasaki)
	482678	Engine, Kawasaki 29KA-DFI (Available only through Kawasaki)
9	04002-18	Bolt, M10-1.50 x 25 Grade 8.8
10	04030-04	Lockwasher, 3/8" Spring
11	04001-21	Bolt, Hex Head 3/8-16 x 1-3/4"
12	04021-09	Nut, Hex Elastic Stop 3/8-16
13	04001-32	Bolt, Hex Head 3/8-16 x 1-1/4"
14	451454	Plate, Engine Mounting
15	04003-12	Bolt, Carriage 5/16-18 x 3/4"
16	04019-03	Nut, Hex Serrated Flange 5/16-18
17	423550	Rear Cover
18	451421	Screen Weldment, Radiator

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

BRAKE AND STEERING COMPONENTS

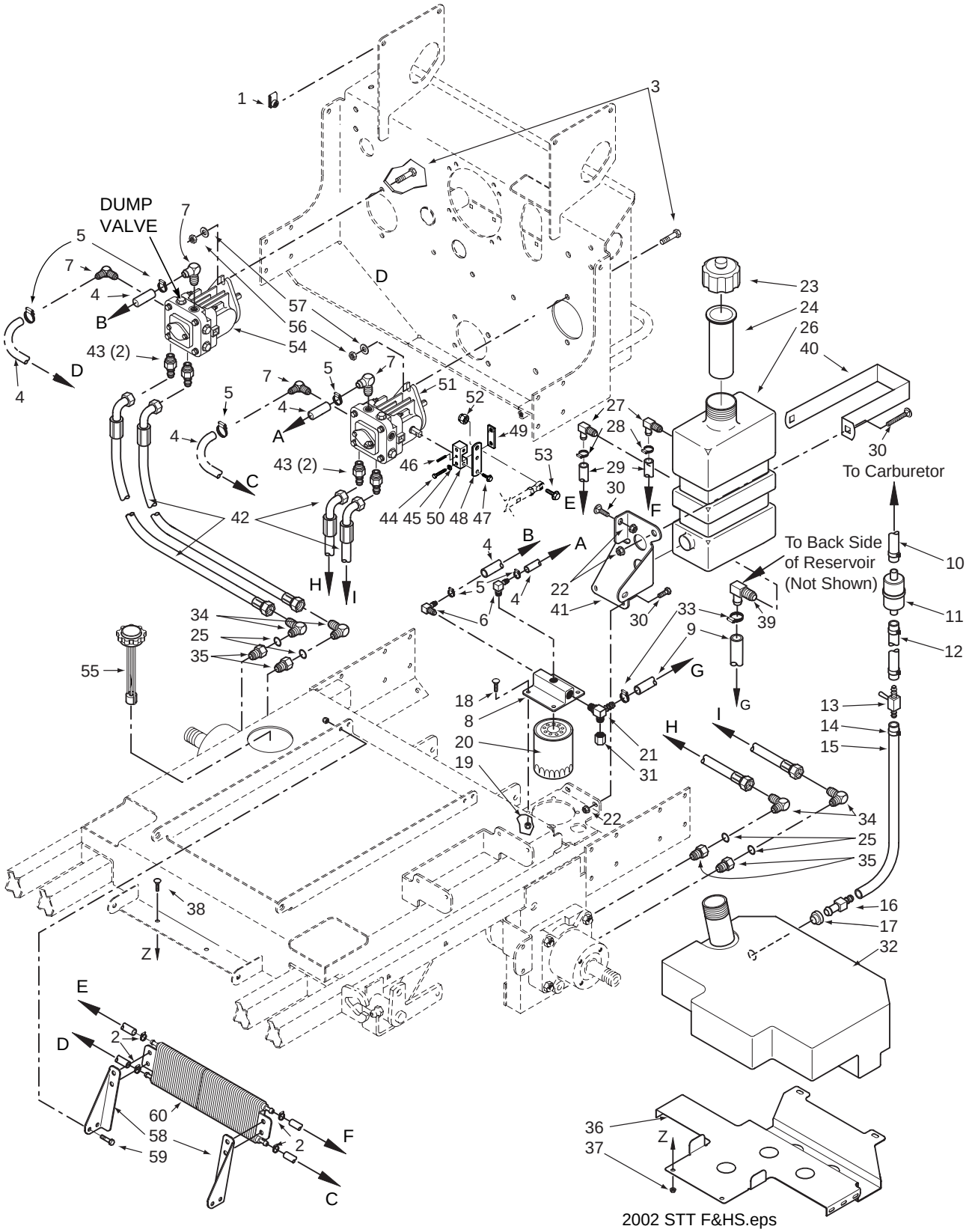


BRAKE AND STEERING COMPONENTS

Ref. No.	Part No.	Description
1	482340	Grip, Handle Bar
2	461386	Handle Bar (Includes item 1)
3	04001-32	Bolt, Hex Head 3/8-16 x 1-1/4"
4	04030-04	Lockwasher, 3/8"
5	04041-07	Flatwasher. 3/8" (.391 x .938 x .105)
6	422372	Bar, Control Lever
7	451483	Control Lever Weldment, LH
	451484	Control Lever Weldment, RH
8	04001-17	Bolt, Hex Head 5/16-18 x 2"
9	04021-10	Nut, Hex Elastic Stop 5/16-18
10	04001-45	Bolt, Hex Head 3/8-16 x 2"
11	04021-09	Nut, Hex Elastic Stop
12	423488	Mount, Control Linkage
13	48224	Ball Bearings, Neutral Return
14	43607	Spacer
15	04069-01	Pin, Rue Cotter 3/8 Dia.
16	04001-13	Bolt, Hex Head, 5/16-18 x 2.75 Zinc.
17	04021-13	Nut, Hex Elastic Stop 5/8-11
18	461601	Bracket, Control Lever LH
	461602	Bracket, Control Lever RH
19	04003-04	Bolt, Carriage 5/16-18 x 1"
20	43600	Spacer, Bearing
21	04003-12	Bolt, Carriage 5/16-18 x 3/4"
22	04019-03	Nut, Hex Serrated Flange 5/16-18
23	04050-01	Ring, Retaining 5/8" External "E"
24	43602	Spacer
25	45918	Bracket, Neutral Return
26	04003-02	Bolt, Carriage 1/4-20 x 3/4"
27	04040-14	Flatwasher, 1/4" (.312 x .750 x .065)
28	04021-08	Nut, Hex Elastic Stop 1/4-20
29	43477	Pin, Retaining Spring
30	481389	Spring
31	04060-01	Roll Pin, Spring 5/32 x 3/4"
32	04061-06	Pin, Cotter 9/16 x 1-1/2"
33	482586	Rod End, Male 3/8-24 RH Thread
34	04020-25	Nut, 3/8-24 RH Thread
35	43629	Tube, Control Link Air Cooled Engine
	43624	Tube, Control Link Liquid Cooled Engine
36	04020-26	Nut, Hex 3/8-24 LH Thread
37	482585	Rod End, Male 3/8-24 LH Thread
38	04021-10	Locknut, 5/16-18, Elastic Stop
39	482452	Gas Damper
40	04001-31	Bolt, Hex Head 3/8-16 x 2-1/2”
41	48114-04	Grease Fitting
42	461082	Lever, Parking Brake (Includes item 43)
43	481548	Grip, Parking Brake
44	04001-22	Bolt, Hex Head 3/8-16 x 2-3/4"
45	04019-04	Nut, Hex Serrated Flange 3/8-16
46	48343-04	Clevis, Traction Control
47	04064-02	Pin, Clevis 3/8-16 x 1-1/16"
48	04061-02	Pin, Cotter 3/32 x .75
49	04004-34	Rod, Parking Brake
50	48544	Rod End, LH Thread
51	48796	Bushing, Self Align
52	04001-08	Bolt, Hex Head 5/16-18 x 3/4"
53	04001-147	Bolt, Hex Hd 3/8-24 x 5-1/4", 23/4" Thrd
54	481637	Switch
55	04010-12	Screw, Hex SLTD WSHR Head #10 32 x 3/4"
56	461471	Brake Linkage, LH
	461472	Brake Linkage, RH
57	45953	Bellcrank, Brake Actuator
58	48807	Spring
59	04001-163	Bolt, Hex Head 1/2-13 x 3-3/4"
60	04021-19	Locknut, Hex 1/2-13 Center Lock
61	04001-52	Bolt, Hex Head 1/2-13 x 2-1/2"
62	482639	Wheel Motor, Ross
63	04001-12	Bolt, Hex Head, 5/16-18 x 1.75, Zinc
64	481601	Brake Band Assembly
65	04064-16	Pin, Clevis 3/8" Dia. x 1.93"
66	43063	Spacer
67	461585	Wheel Hub/Brake Drum Assembly
68	04063-25	Key, Woodruff 5/16 x 1”
69	481552	Wheel Assembly 23 x 10.5-12 (52” Only)
	481659	Rim W/Valve Stem (52” Only)
	481660	Tire, 23 x 10.5-12 (52” Only)
	481850	Wheel Assembly 24 x 12-12 Turf Master
	481851	Rim W/Valve Stem
	481852	Tire, 24 x 12-12 Turf Master
70	04028-02	Lug Nut, 1/2-20
71	48680	Nut, Hex Castle
72	422373	Threaded Plate
73	04001-20	Bolt, Hex Head 3/8-16 x 1-1/2"
74	423279	Plate Weldment, Motor Backing
75	423491	Actuator Switch
76	04017-16	Bolt, Hex Serrated Flange 5/16-18 x 3/4"
77	04003-36	Bolt, Carriage 3/8-16 x 4-3/4”
78	04001-19	Bolt, Hex Head 3/8-16 x 1”
79	481638	Switch
80	04001-168	Bolt, Hex Head 3/8-16 x 1-1/4” Grade 8

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

FUEL AND HYDRAULIC SYSTEM



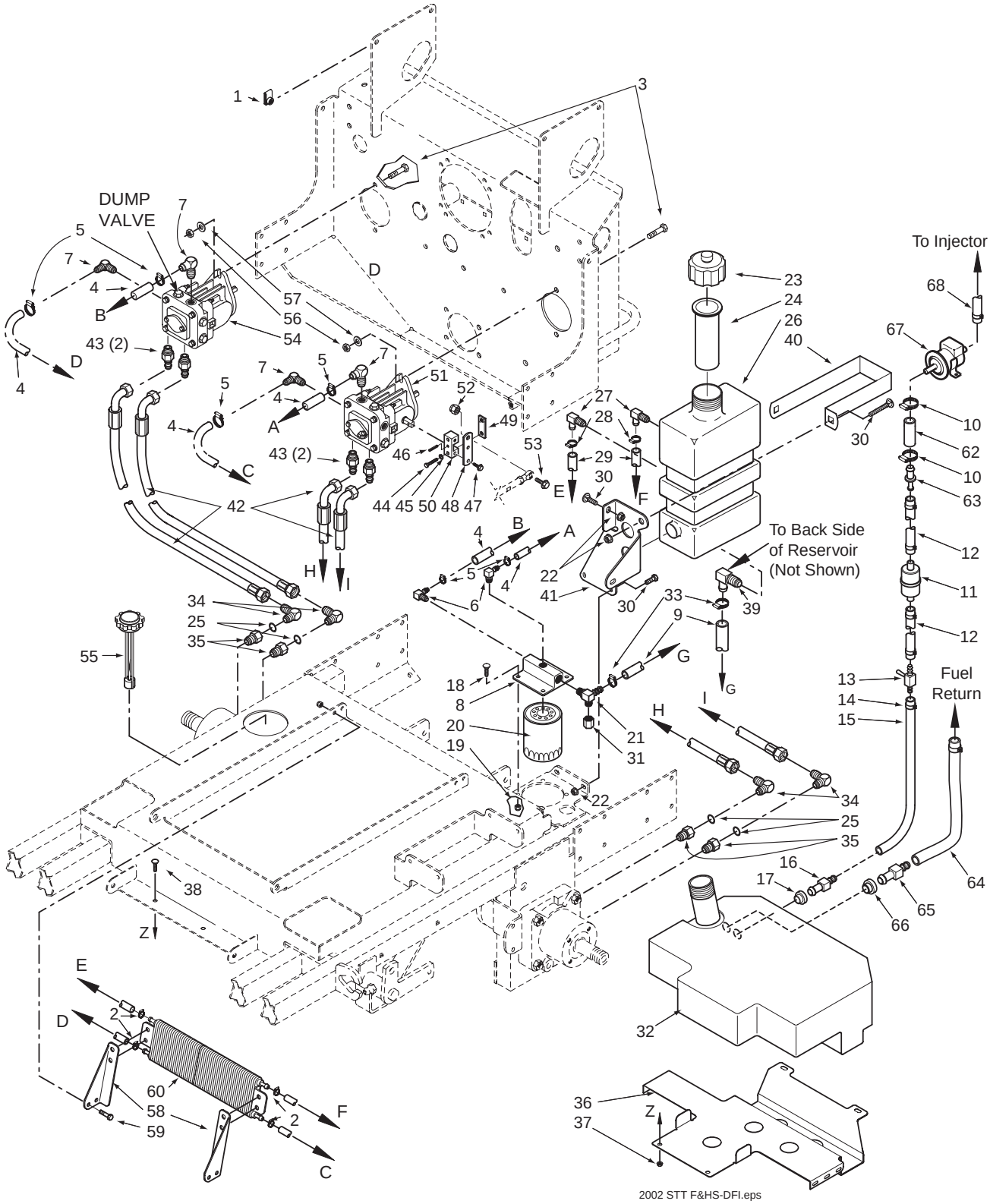
FUEL AND HYDRAULIC SYSTEM

Ref. No.	Part No.	Description
1	04110-01	U-Nut 1/4-20
2	48136-13	Hose Clamp, 0.69 dia.
3	04001-03	Bolt, Hex Head 1/4-20 x 2.0”
4	48811	Hose, 3/8” ID Pushlock - (order by inch)
5	48136-07	Clamp, Hose 1/2”
6	481301-03	Elbow, 90 Degree - 1/4 NPT x 3/8 Hose
7	482266-01	Elbow, 90 Degree - 9/16 O-ring x 3/8 Hose
8	48471-02	Oil Filter Base
9	482506	Hose Assembly, 1/2” ID (Tank to Filter Base)
10	**	Fuel Hose to Carb.
11	**	Fuel Filter
12	48058	Fuel Hose, 1/4” ID. (order by inch)
13	48568	Valve, Shutoff Kohler
	481753	Valve, Shutoff Kawasaki
14	48059-01	Clamp, Fuel Hose
15	48058	Fuel Hose, 1/4” ID. (order by inch)
16	481602	Hose Fitting
17	48309	Bushing
18	04001-09	Bolt, Hex Head 5/16-18 x1.0” Zinc
19	04019-03	Nut, Serrated Flange 5/16-18
20	48758	Oil Filter
21	482483	Tee, 3/4 O-ring x JIC x 1/2” Hose
22	04021-08	Nut, Hex Elastic Stop 1/4-20
23	481164	Cap, Hydraulic Tank
24	481507	Insert, Filler Neck
25	48603-02	O-Ring
26	461451	Oil Reservoir Assembly (includes 24, 27, 39)
27	48350-09	Elbow, 90 Degree, 9/16-18 JIC x 9/16 O-Ring
28	48136-13	Hose Clamp, 0.69 dia.
29	48811	Hose, 3/8” ID, Pushlock (order by inch)
30	04010-10	Screw, Phillips Head, 1/4-20
31	48571-02	Cap
32	461445	Fuel Tank Assembly (includes items 23 & 24)
33	48136-05	Clamp, Hose
34	48350-05	Elbow, 90 Degree, 7/8-14 THD
35	48938-02	Bushing, 7/8-14 JIC x 3/4-16 O-Ring
36	423701	Support Bracket, Fuel Tank
37	04019-03	Nut, 5/16-18 Serrated Flange
38	04003-02	Bolt, Carraige 1/4-20 x 3/4”
39	482574	Elbow, 90 Degree
40	423513	Strap, Hydraulic Tank
41	423485	Support Bracket, Hydraulic Tank
42	481611	Hose Assembly, Pump
43	48572-04	Union, 3/4-16 JIC x 3/4-16 O-ring
44	04001-59	Bolt, Hex Head, 1/4-20 x 1-14”
45	04030-02	Lockwasher, 1/4” Spring
46	04060-06	Roll Pin, Spring 3/16 x 3/4”
47	04017-05	Bolt, Hex Serrated Flange, 1/4-20 x 3/4”
48	423685	Lever, Control
49	421203	Clamp Plate, Pump Control
50	48829	Block, Pump Control
51	482695	Pump, Left Hand, BDP-16A-410
52	04021-09	Nut, Hex, Elastic Stop 3/8-16
53	04001-32	Bolt, Hex Head, 3/8-16 x 1-1/4
54	482696	Pump, Right Hand, BDP 16A-307
55	482497	Cap, Fuel Tank W/Guage
56	04021-09	Nut, Hex Elastic Stop 3/8-16
57	04043-04	Flatwasher, 3/8” (.391 x .938 x .105) Grade 8
58	423524	Mounting Bracket - LH, Oil Cooler
	423525	Mounting Bracket - RH, Oil Cooler
59	04001-08	Bolt, Hex Head 5/16-18 x 3/4”
60	482505	Cooler, Oil
61	48136-13	Clamp, .69 Dia.

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

** Available through the individual engine manufacturer.

FUEL AND HYDRAULIC SYSTEM - KAWASAKI 29DFI

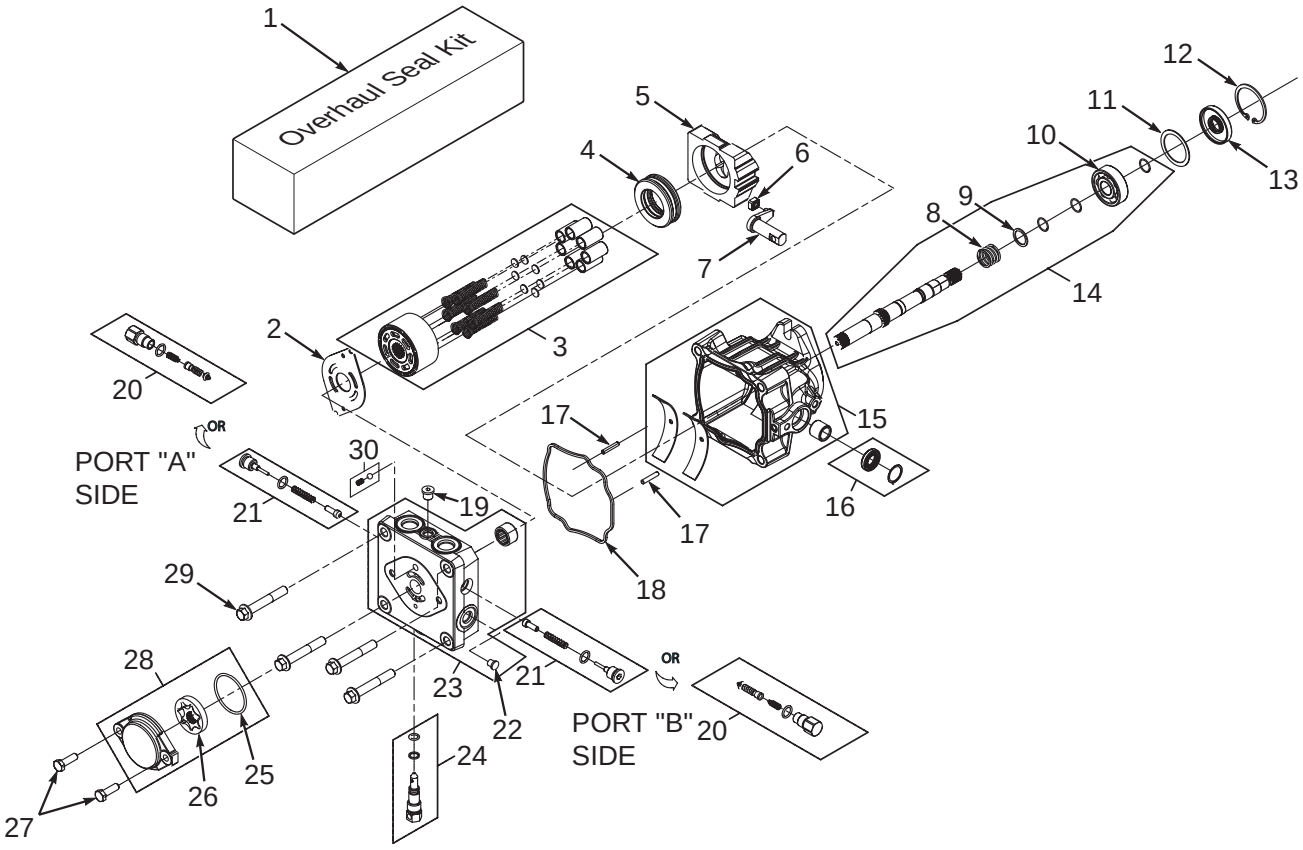


FUEL AND HYDRAULIC SYSTEM - KAWASAKI 29DFI

Ref. No.	Part No.	Description
1	04110-01	U-Nut 1/4-20
2	48136-13	Hose Clamp, 0.69 dia.
3	04001-03	Bolt, Hex Head 1/4-20 x 2.0”
4	48811	Hose, 3/8” ID Pushlock - (order by inch)
5	48136-07	Clamp, Hose 1/2”
6	481301-03	Elbow, 90 Degree - 1/4 NPT x 3/8 Hose
7	482266-01	Elbow, 90 Degree - 9/16 O-ring x 3/8 Hose
8	48471-02	Oil Filter Base
9	482506	Hose Assembly, 1/2” ID (Tank to Filter Base)
10	48136-05	Clamp, .87 max Dia.
11	**	Fuel Filter, Kawasaki (p/n 49019-1055)
12	481178	Fuel Hose, 5/16” ID. (order by inch)
13	481308	Valve, Shutoff Kawasaki
14	48059-01	Clamp, Fuel Hose
15	481178	Fuel Hose, 5/16” ID. (order by inch)
16	481312	Hose Fitting
17	48309	Bushing
18	04001-09	Bolt, Hex Head 5/16-18 x1.0” Zinc
19	04019-03	Nut, Serrated Flange 5/16-18
20	48758	Oil Filter
21	482483	Tee, 3/4 O-ring x JIC x 1/2” Hose
22	04021-08	Nut, Hex Elastic Stop 1/4-20
23	481164	Cap, Hydraulic Tank
24	481507	Insert, Filler Neck
25	48603-02	O-Ring
26	461451	Oil Reservoir Assembly (includes 24, 27, 39)
27	48350-09	Elbow, 90 Degree, 9/16-18 JIC x 9/16 O-Ring
28	48136-13	Hose Clamp, 0.69 dia.
29	48811	Hose, 3/8” ID, Pushlock (order by inch)
30	04010-10	Screw, Phillips Head, 1/4-20
31	48571-02	Cap
32	461586	Fuel Tank Assembly (incl. items 16, 17, 65, 66)
33	48136-05	Clamp, Hose
34	48350-05	Elbow, 90 Degree, 7/8-14 THD
35	48938-02	Bushing, 7/8-14 JIC x 3/4-16 O-Ring
36	423701	Support Bracket, Fuel Tank
37	04019-03	Nut, 5/16-18 Serrated Flange
38	04003-02	Bolt, Carraige 1/4-20 x 3/4”
39	482574	Elbow, 90 Degree
40	423513	Strap, Hydraulic Tank
41	423485	Support Bracket, Hydraulic Tank
42	481611	Hose Assembly, Pump
43	48572-04	Union, 3/4-16 JIC x 3/4-16 O-ring
44	04001-59	Bolt, Hex Head, 1/4-20 x 1-14”
45	04030-02	Lockwasher, 1/4” Spring
46	04060-06	Roll Pin, Spring 3/16 x 3/4”
47	04017-05	Bolt, Hex Serrated Flange, 1/4-20 x 3/4”
48	423685	Lever, Control
49	421203	Clamp Plate, Pump Control
50	48829	Block, Pump Control
51	482695	Pump, Left Hand, BDP-16A-410
52	04021-09	Nut, Hex, Elastic Stop 3/8-16
53	04001-32	Bolt, Hex Head, 3/8-16 x 1-1/4
54	482696	Pump, Right Hand, BDP 16A-307
55	482497	Cap, Fuel Tank W/Guage
56	04021-09	Nut, Hex Elastic Stop 3/8-16
57	04043-04	Flatwasher, 3/8” (.391 x .938 x .105) Grade 8
58	423524	Mounting Bracket - LH, Oil Cooler
	423525	Mounting Bracket - RH, Oil Cooler
59	04001-08	Bolt, Hex Head 5/16-18 x 3/4”
60	482505	Cooler, Oil
61	48136-13	Clamp, .69 Dia.
62	482702	Hose, Fuel Line (order by inch)
63	**	Adapter, 1/2” - 5/16” (p/n 59071-2141)
64	48058	Hose, 1/4” Fuel Line (order by inch)
65	482703	Fitting, Hose
66	48309	Bushing
67	**	Fuel Pump, Kawasaki 29DFI
68	481178	Fuel Hose, 5/16” ID. (order by inch)

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.
** Available through the individual engine manufacturer.

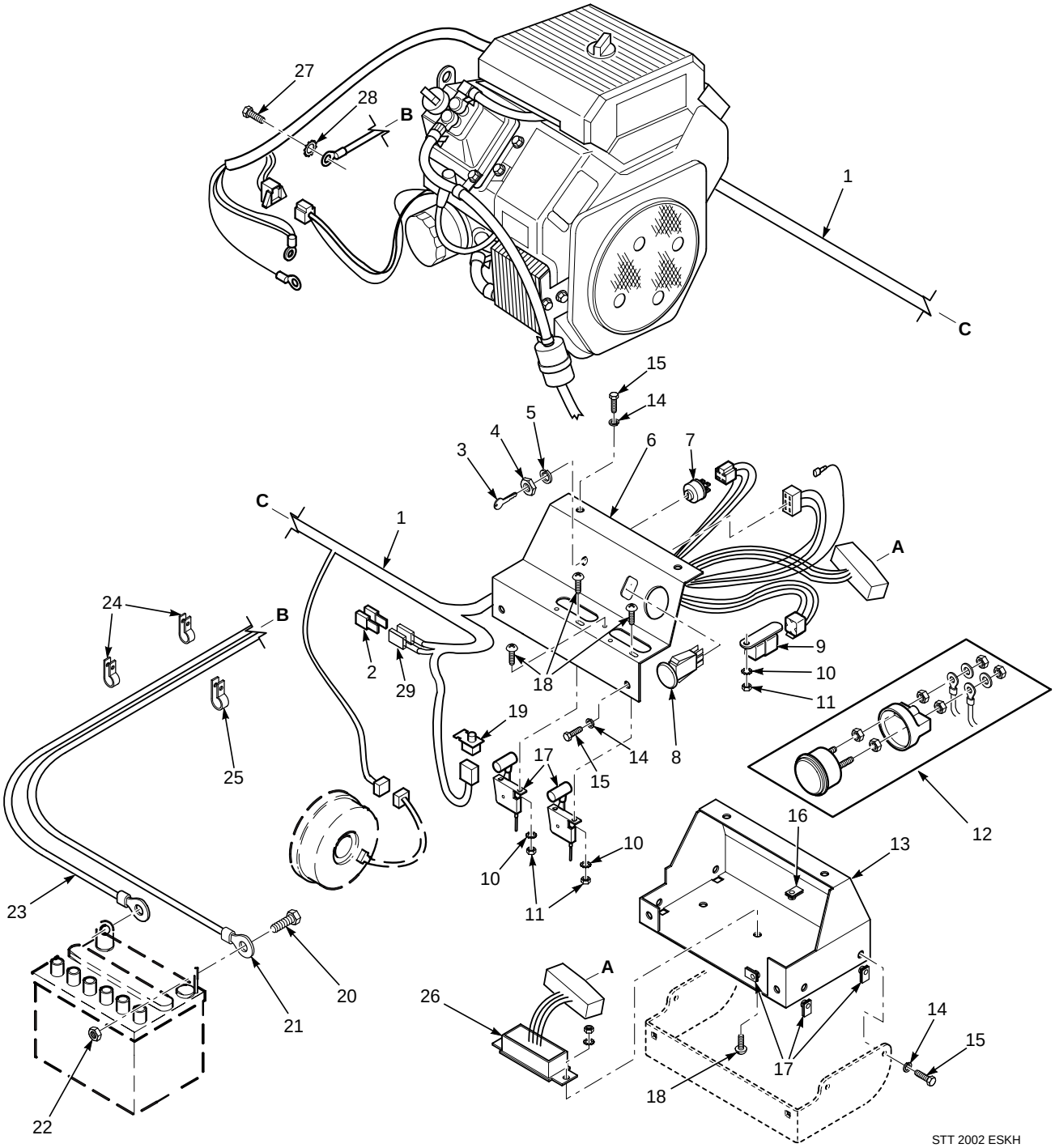
BDP-16A HYDRAULIC PUMP ASSEMBLY



BDP-16A HYDRAULIC PUMP ASSEMBLY

Ref. No.	Part No.	Description
1	HG70740	Overhaul Seal Kit
2	HG51455	Valve Plate
3	HG70735	Cylinder Block Kit - 16cc
4	HG51462	Thrust Ball Bearing Assembly
5	HG51436	Variable Swashplate
6	HG2000015	Slot Guide
7	HG2000014	Trunnion Arm
8	HG2000025	Block Spring
9	HG2000024	Block Thrust Washer
10	HG2000032	Shaft Ball Bearing
11	HG2000023	Spacer
12	HG2000038	Retaining Ring
13	HG51092	Seal
14	HG70581	Kit, Pump Shaft
15	HG70738	Housing Kit
16	HG70739	Trunnion Seal Kit
17	HG50641	Pin
18	HG51437	O-Ring
19	HG9005110-7500	Straight Thread Plug
20	HG70743	Shock Valve Kit (.031 Orifice)
21	HG70742	Shock Valve Kit (.024 Orifice)
22	HG9005200-7500	Straight Thread Plug
23	HG70736	End Cap Kit
24	HG2513030	Bypass Valve Kit
25	HG9004100-1430	O-Ring
26	HG50406	Gerotor Assembly (.19 cu.in./rev.)
27	HG50173	Socket Head Cap Screw (M8 x 1.25-25mm)
28	HG2510071	Charge Pump Kit (.19 STD. Splined)
29	HG51457	Hex Screw, Flanged Head (M10 x 1.50-65mm)
30	HG70402	Charge Relief Kit

ELECTRICAL SYSTEM (KOHLER)

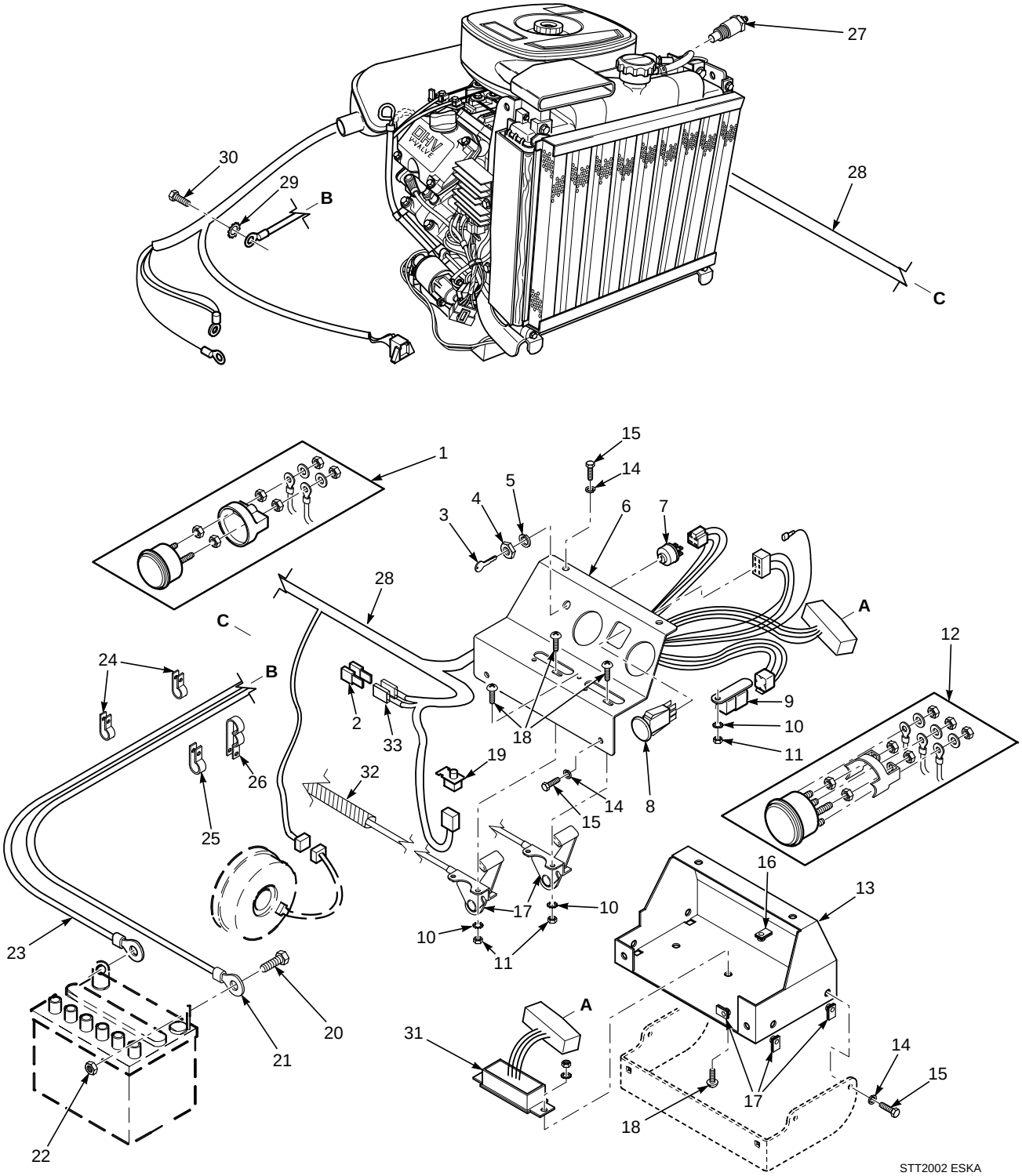


ELECTRICAL SYSTEM (KOHLER)

Ref. No.	Part No.	Description
1	482656	Wire Harness, STT Air Cooled
2	48298	Fuse, 20 AMP
3	48017-02	Key & Ring Assembly
4	48017-04	Nut, Hex 5/8-32
5	48017-03	Lockwasher, 5/8" Internal
6	423526	Instrument Panel, Top w/Decals
7	48798	Key Switch
8	481687	Switch, PTO
9	48788	Relay
10	04031-01	Lockwasher, #10 External Tooth
11	04020-01	Nut, Hex #10-32
12	481755	Ammeter
13	451081	Base, Instrument Panel
14	04030-02	Lockwasher, 1/4"
15	04001-01	Bolt, Hex Head 1/4-20 x 3/4"
16	04110-01	U-Nut, 1/4-20
17	481544	Throttle And Choke Controls
18	04010-01	Screw, Phillips Washer Head #10-32 x 1/2"
19	481638	Switch, Interlock-Seat
20	04001-44	Bolt, Hex Head 1/4-20 x 1/2"
21	48029-22	Cable, Battery - Red
22	04020-02	Nut, Hex 1/4-20
23	48029-11	Cable, Battery - Black
24	48030-09	Clamp, Cable 1/2" ID.
25	48030-10	Clamp, Cable 3/4" ID.
26	482313	Electronic Module
27	04002-12	Bolt, Hex Head M8-1.25 x 20
28	04031-03	Lockwasher, 5/16" External Tooth
29	48430	Fuse Holder w/Fuse and Connector
	482588	Clip, Fuse Holder

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

ELECTRICAL SYSTEM (23HP & 27HP KAWASAKI)

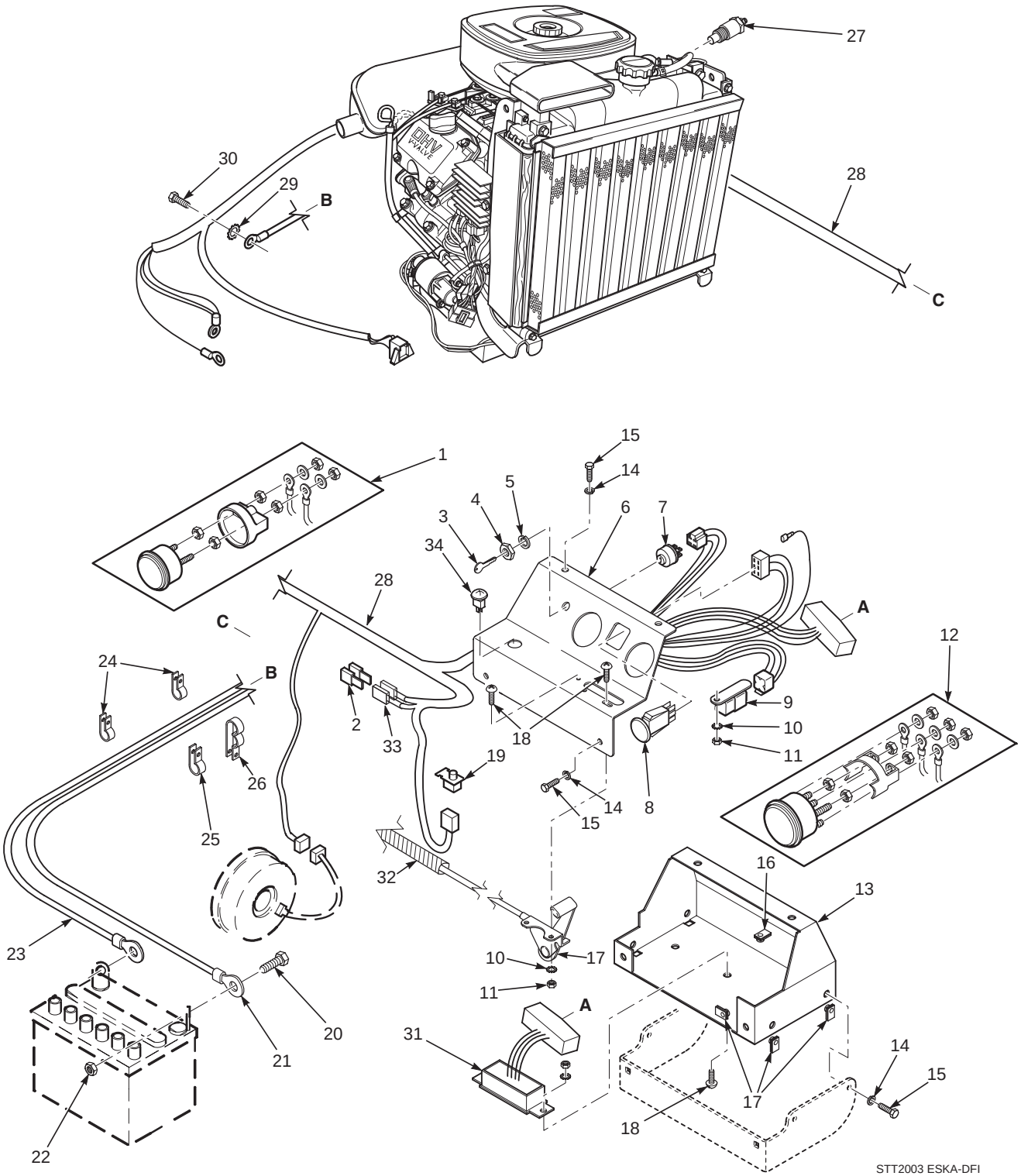


ELECTRICAL SYSTEM (23HP & 27HP KAWASAKI)

Ref. No.	Part No.	Description
1	481755	Ammeter
2	48298	Fuse, 20 AMP
3	48017-02	Key & Ring Assembly
4	48017-04	Nut, Hex 5/8-32
5	48017-03	Lockwasher, 5/8" Internal
6	423526	Instrument Panel, Top w/Decals
7	48798	Key Switch
8	481687	Switch, PTO
9	48788	Relay
10	04031-01	Lockwasher, #10 External Tooth
11	04020-01	Nut, Hex #10-32
12	481183	Water Temp. Gauge (STT - KA Only)
13	451081	Base, Instrument Panel
14	04030-02	Lockwasher, 1/4"
15	04001-01	Bolt, Hex Head 1/4-20 x 3/4"
16	04110-01	U-Nut, 1/4-20
17	481662	Throttle And Choke Controls
18	04010-01	Screw, Phillips Washer Head #10-32 x 1/2"
19	481638	Switch, Interlock-Seat
20	04001-44	Bolt, Hex Head 1/4-20 x 1/2"
21	48029-06	Cable, Battery - Red
22	04020-02	Nut, Hex 1/4-20
23	48029-11	Cable, Battery - Black
24	48030-09	Clamp, Cable 1/2" ID.
25	48030-10	Clamp, Cable 3/4" ID.
26	48030-11	Clamp, Cable
27	481670	Sending Unit, Water Temp.
28	482657	Wire Harness, STT Liquid Cooled
29	04031-03	Lockwasher, 5/16" External Tooth
30	04002-12	Bolt, Hex Head M8-1.25 x 20
31	482313	Electronic Module
32	481945-01	Heatshield, Flexible
33	48430	Fuse Holder w/Fuse and Connector
	482588	Clip, Fuse Holder

* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

ELECTRICAL SYSTEM (29HP-DFI KAWASAKI)



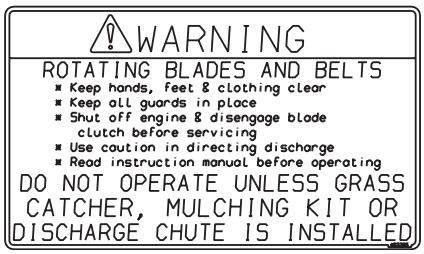
ELECTRICAL SYSTEM (29HP-DFI KAWASAKI)

Ref. No.	Part No.	Description
1	481755	Ammeter
2	48298	Fuse, 20 AMP
3	48017-02	Key & Ring Assembly
4	48017-04	Nut, Hex 5/8-32
5	48017-03	Lockwasher, 5/8" Internal
6	461631	Instrument Panel, Top w/Decals
7	48798	Key Switch
8	481687	Switch, PTO
9	48788	Relay
10	04031-01	Lockwasher, #10 External Tooth
11	04020-01	Nut, Hex #10-32
12	481183	Water Temp. Gauge (STT - KA Only)
13	451081	Base, Instrument Panel
14	04030-02	Lockwasher, 1/4"
15	04001-01	Bolt, Hex Head 1/4-20 x 3/4"
16	04110-01	U-Nut, 1/4-20
17	481662	Throttle Controls
18	04010-01	Screw, Phillips Washer Head #10-32 x 1/2"
19	481638	Switch, Interlock-Seat
20	04001-44	Bolt, Hex Head 1/4-20 x 1/2"
21	48029-06	Cable, Battery - Red
22	04020-02	Nut, Hex 1/4-20
23	48029-11	Cable, Battery - Black
24	48030-09	Clamp, Cable 1/2" ID.
25	48030-10	Clamp, Cable 3/4" ID.
26	48030-11	Clamp, Cable
27	481670	Sending Unit, Water Temp.
28	482795	Wire Harness, STT Liquid Cooled Digital Fuel Injection (DFI)
29	04031-03	Lockwasher, 5/16" External Tooth
30	04002-12	Bolt, Hex Head M8-1.25 x 20
31	482313	Electronic Module
32	481945-01	Heatshield, Flexible
33	48430	Fuse Holder w/Fuse and Connector
34	481182	Indicator Light, Check Engine

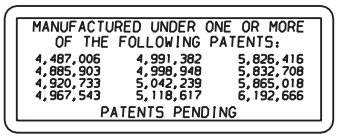
* Common hardware which should be purchased locally. All bolts Grade 5 plated, all other fasteners zinc plated.

REPLACEMENT DECALS AND INFORMATION PLATES

1


WARNING
ROTATING BLADES AND BELTS
Keep hands, feet & clothing clear
Keep all guards in place
Shut off engine & disengage blade clutch before servicing
Use caution in directing discharge
Read instruction manual before operating
DO NOT OPERATE UNLESS GRASS CATCHER, MULCHING KIT OR DISCHARGE CHUTE IS INSTALLED

2



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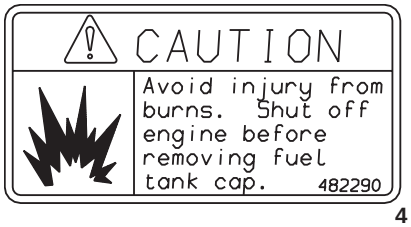

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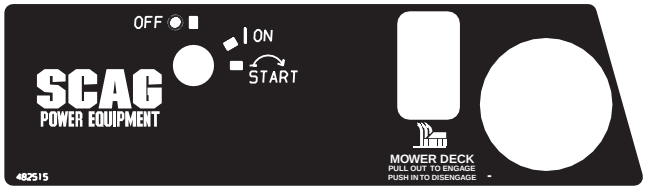

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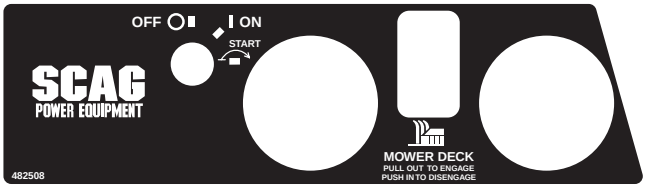

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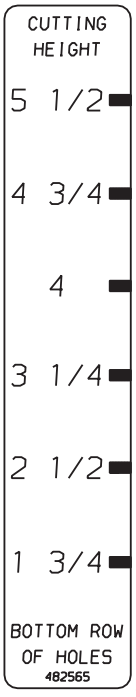

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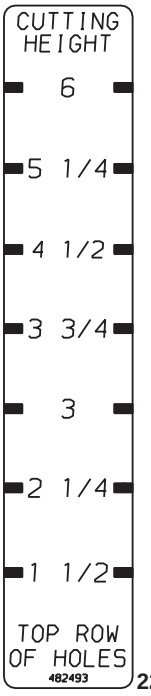

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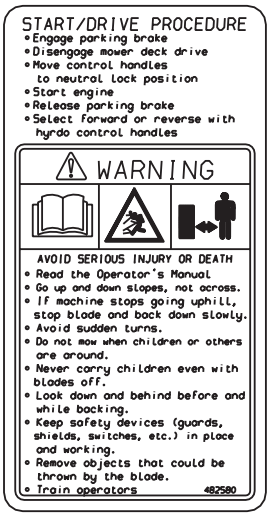
START/DRIVE PROCEDURE
Engage parking brake
Disengage mower deck drive
Move control handles to neutral lock position
Start engine
Release parking brake
Select forward or reverse with hyrdo control handles
WARNING
AVOID SERIOUS INJURY OR DEATH
Read the Operator's Manual
Go up and down slopes, not across.
If machine stops going uphill, stop blade and back down slowly.
Avoid sudden turns.
Do not mow when children or others are around.
Never carry children even with blades off.
Look down and behind before and while backing.
Keep safety devices (guards, shields, switches, etc.) in place and working.
Remove objects that could be thrown by the blade.
Train operators
482580

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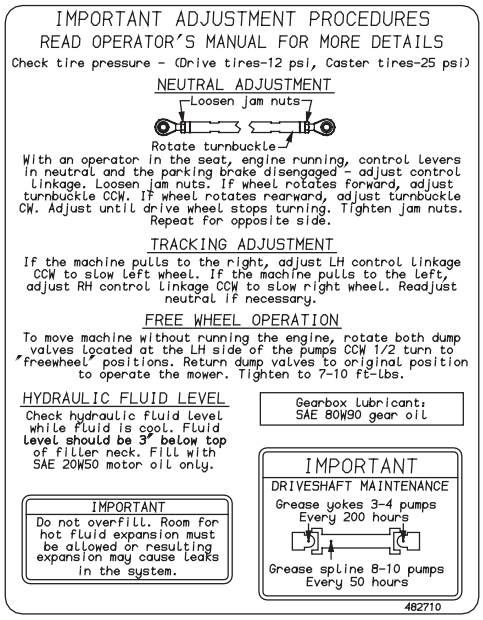
STT 2003 Decals 1

REPLACEMENT DECALS AND INFORMATION PLATES

Ref. No.	Part No.	Description
1	482285	Decal, Danger-Spinning Blades
2	482286	Decal, Warning-Rotating Blades
3	481954	Decal, 52 Advantage
	481955	Decal, 61 Advantage
	481956	Decal, 72 Advantage
4	482290	Decal, Fuel Tank
5	48656	Decal, Patents
6	481568	Decal, Traction Control
7	481971	Decal, Heavy Duty Commercial
8	48404	Decal, MetalCraft-Made In USA
9	481039	Decal, Belt Cover
10	482515	Decal, Instrument Panel-Upper (Air Cooled)
11	482508	Decal, Instrument Panel-Upper (Kawasaki)
12	482507	Decal, Instrument Panel-Lower
13	482565	Decal, Cutting Height - Lower
14	482580	Decal, Start/Drive Procedure
15	482710	Decal, Seat Support
16	482577	Decal, Turf Tiger
17	481570	Decal, Turf Tiger
18	481664	Decal, Stripes-RH
19	481663	Decal, Stripes-LH
20	481694	Decal, Tiger
21	482165	Decal, Warning
22	482493	Decal, Cutting Height - Upper
23	482796	Decal, Instrument Panel - Lower (Kawasaki 29HP-DFI only)


IMPORTANT ADJUSTMENT PROCEDURES
READ OPERATOR'S MANUAL FOR MORE DETAILS
Check tire pressure - (Drive tires-12 psi, Caster tires-25 psi)
NEUTRAL ADJUSTMENT
Loosen jam nuts
Rotate turnbuckle
With an operator in the seat, engine running, control levers in neutral and the parking brake disengaged - adjust control linkage. Loosen jam nuts. If wheel rotates forward, adjust turnbuckle CCW. If wheel rotates rearward, adjust turnbuckle CW. Adjust until drive wheel stops turning. Tighten jam nuts. Repeat for opposite side.
TRACKING ADJUSTMENT
If the machine pulls to the right, adjust LH control linkage CCW to slow left wheel. If the machine pulls to the left, adjust RH control linkage CCW to slow right wheel. Readjust neutral if necessary.
FREE WHEEL OPERATION
To move machine without running the engine, rotate both dump valves located at the LH side of the pumps CCW 1/2 turn to "freewheel" positions. Return dump valves to original position to operate the mower. Tighten to 7-10 ft-lbs.
HYDRAULIC FLUID LEVEL
Check hydraulic fluid level while fluid is cool. Fluid level should be 3" below top of filler neck. FILL with SAE 20W50 motor oil only.
Gearbox Lubricant: SAE 80W90 gear oil
IMPORTANT
Do not overfill. Room for hot fluid expansion must be allowed or resulting expansion may cause leaks in the system.
IMPORTANT
DRIVESHAFT MAINTENANCE
Grease yokes 3-4 pumps Every 200 hours
Grease spline 8-10 pumps Every 50 hours
482710

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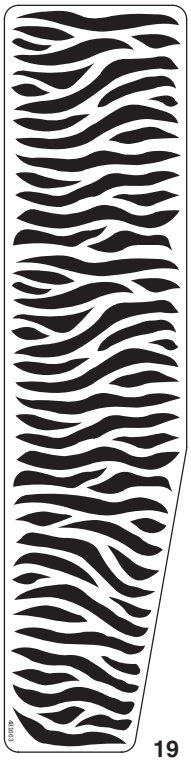

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SCAG

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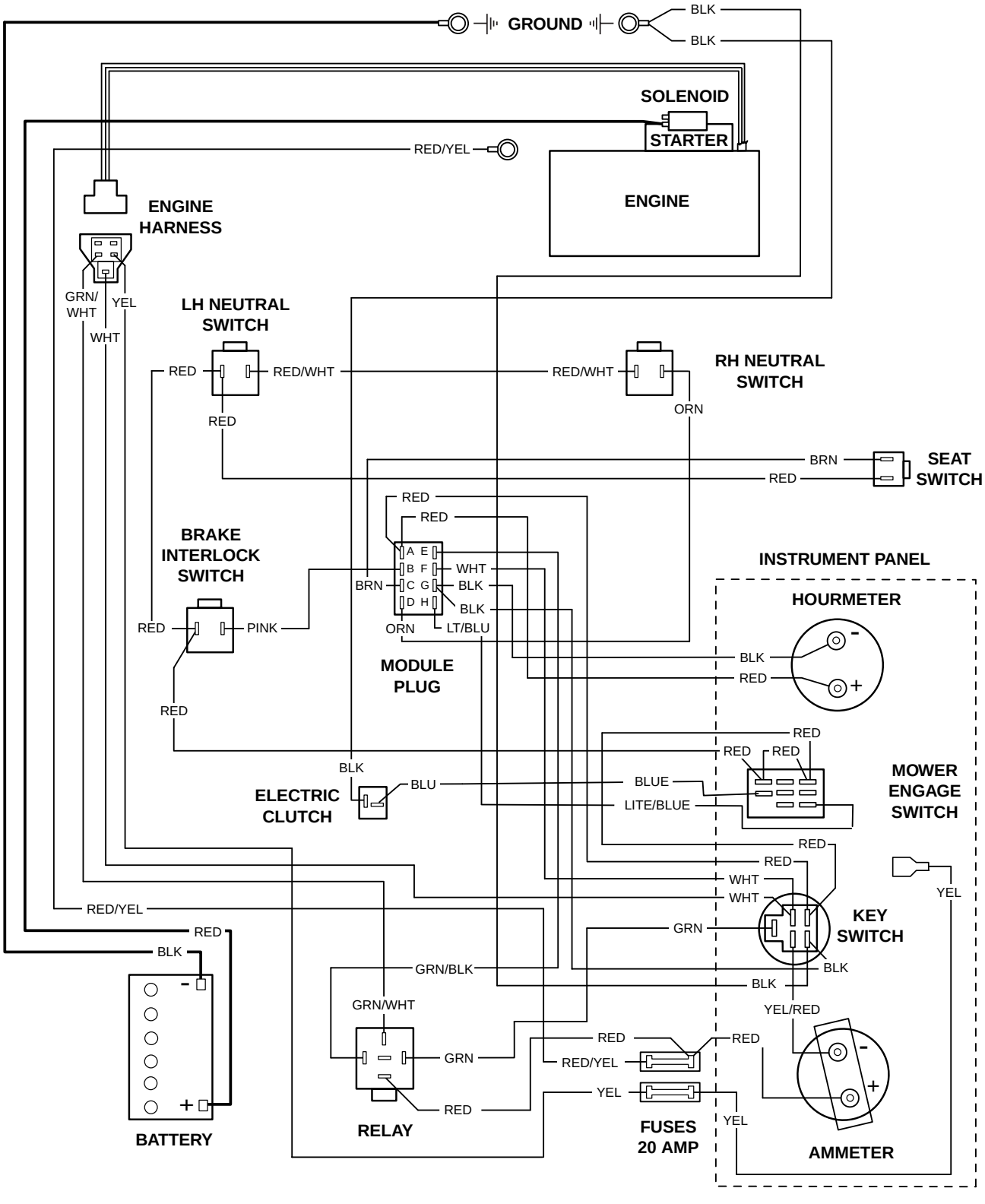
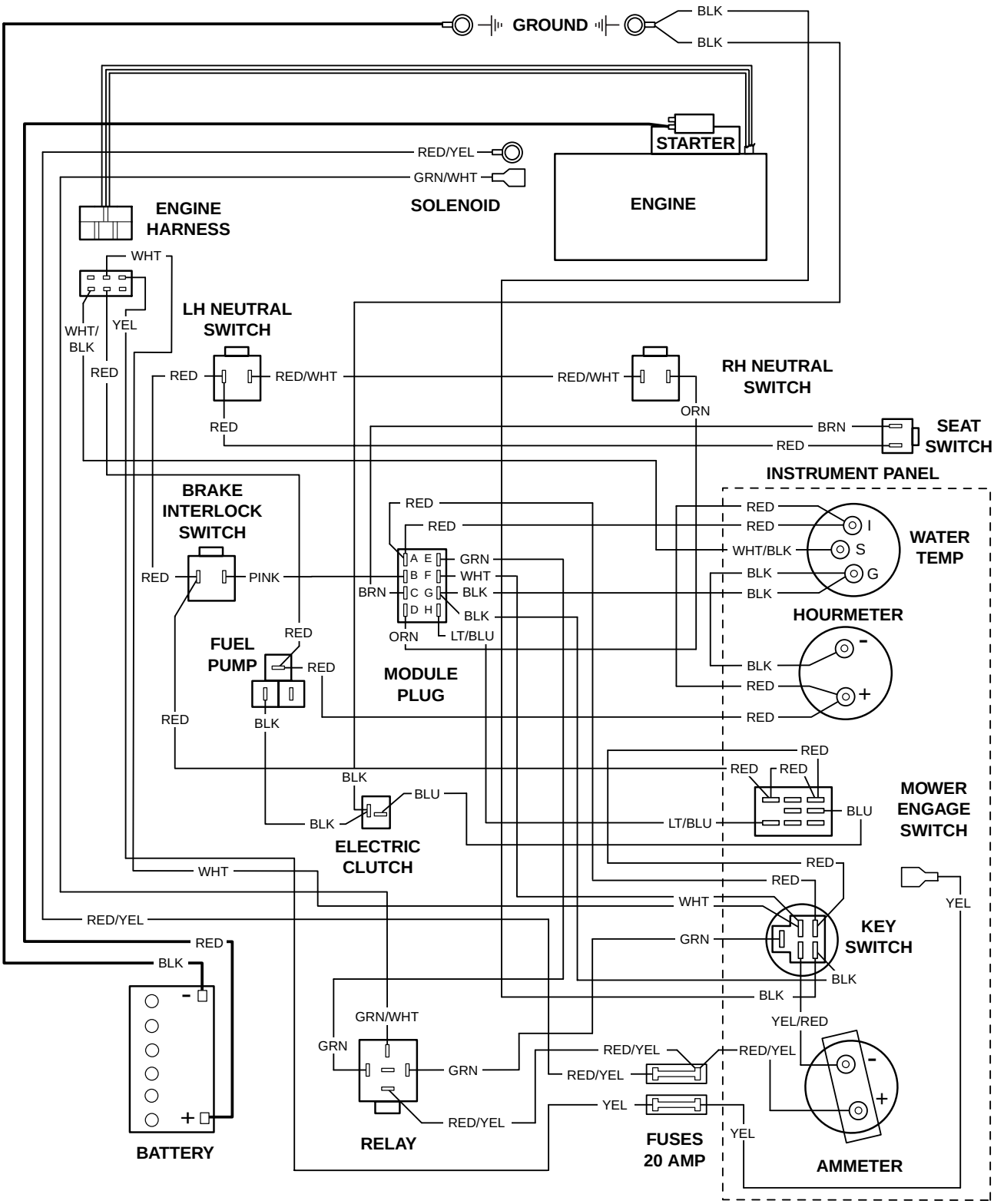
2003 STT Decals Page2

ELECTRICAL SCHEMATIC (KOHLER)



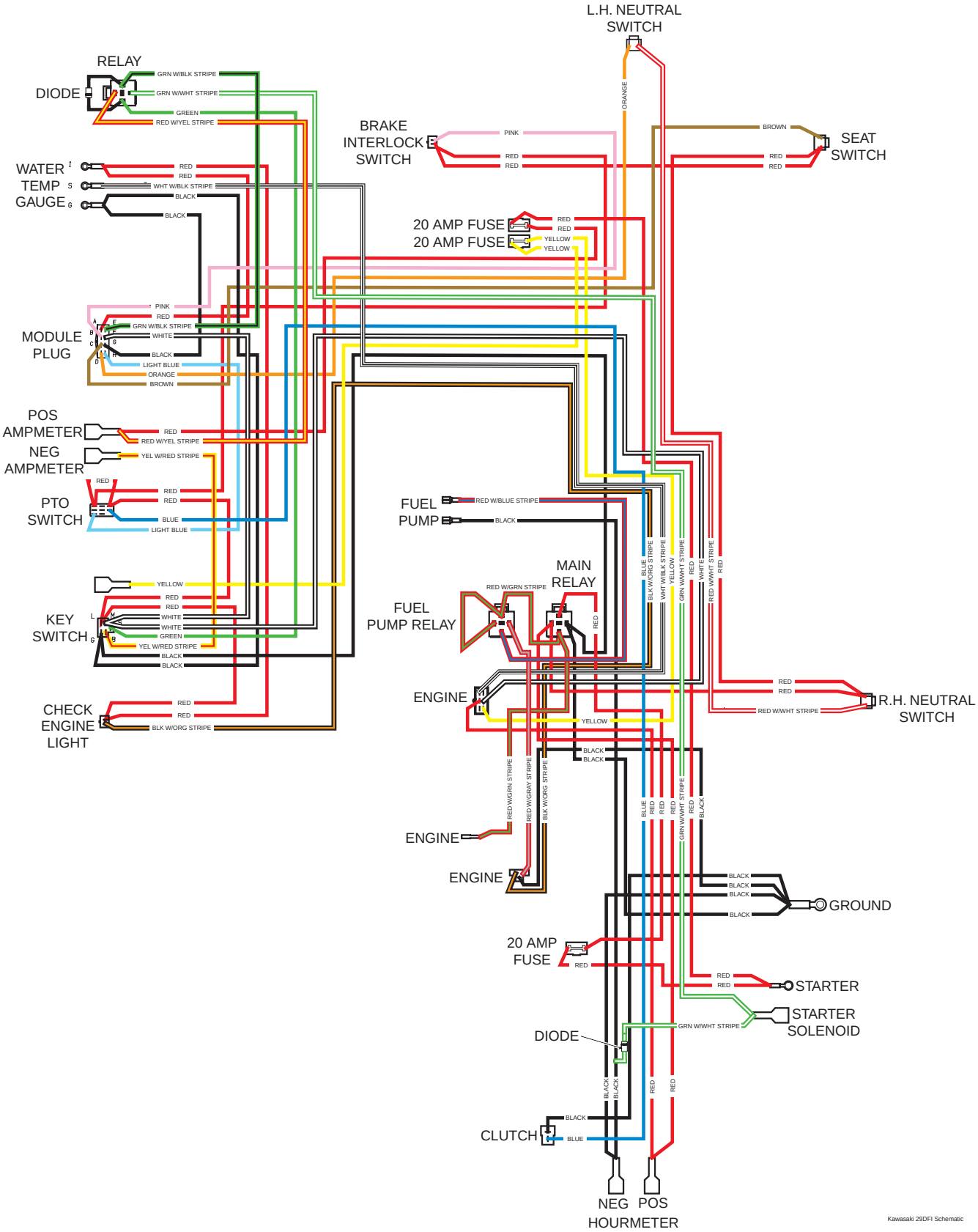
STT99SKH

ELECTRICAL SCHEMATIC (23HP &27HP KAWASAKI)



STT2001 23&27HP SKA

ELECTRICAL SCHEMATIC (KAWASAKI 29HP - DFI)



LIMITED WARRANTY - COMMERCIAL EQUIPMENT

Any part of the Scag commercial mower manufactured by Scag Power Equipment and found, in the reasonable judgment of Scag, to be defective in materials or workmanship, will be repaired or replaced by an Authorized Scag Service Dealer without charge for parts and labor. This warranty is limited to the original purchaser and is not transferable. Proof of purchase will be required by the dealer to substantiate any warranty claims. All warranty work must be performed by an Authorized Scag Service Dealer.

This warranty is limited to the following specified periods from the date of the original retail purchase for defects in materials or workmanship:

* Wear items including drive belts, blades, hydraulic hoses and tires are warranted for ninety (90) days.
* Batteries are covered for ninety (90) days.
* Frame and structural components including oil reservoir, fittings, and oil coolers are warranted for 2 years (Parts and labor 1st year; Parts only 2nd year).
* Cutter decks are warranted against cracking for a period of three (3) years. (Parts and labor 1st year; Parts only 2nd and 3rd year) The repair or replacement of the cutter deck will be at the option of Scag Power Equipment. We reserve the right to request components for evaluation. This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.
* Engines and electric starters are covered by the engine manufacturer's warranty period.
* Major drive system components are warranted for two (2) years by Scag Power Equipment. (Parts and labor 1st year; Parts only 2nd year) (Two year warranty exclude fittings, hoses, drive belts). The repair or replacement of the hydraulic pump or hydraulic motor will be at the option of Scag Power Equipment. This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.
* Electric clutches have a Limited Warranty for 2 year (Parts and labor 1st year; Parts only 2nd year).
* Cutter Spindle Assemblies 46631 have a Limited Warranty for three years (Parts and labor 1st year; Parts only 2nd and 3rd year).
* Any Scag product used for rental purposes is covered by a 90 day warranty.

The Scag mower, including any defective part must be returned to an Authorized Scag Service Dealer within the warranty period. The expense of delivering the mower to the dealer for warranty work and the expense of returning it to the owner after repair will be paid for by the owner. Scag's responsibility is limited to making the required repairs and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Scag mower.

This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual. The warranty does not apply to any damage to the mower that is the result of improper maintenance, or to any mower or parts that have not been assembled or installed as specified in the Operator's Manual and Assembly Manual. The warranty does not cover any mower that has been altered or modified, changing performance or durability. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which, in the reasonable judgment of Scag, are either incompatible with the Scag mower or adversely affect its operation, performance or durability.

Scag Power Equipment reserves the right to change or improve the design of any mower without assuming any obligation to modify any mower previously manufactured. All other implied warranties are limited in duration to the two (2) year warranty period or ninety (90) days for mowers used for rental purpose. Accordingly, any such implied warranties including merchantability, fitness for a particular purpose, or otherwise, are disclaimed in their entirety after the expiration of the appropriate two year or ninety day warranty period. Scag's obligation under this warranty is strictly and exclusively limited to the repair or replacement of defective parts and Scag does not assume or authorize anyone to assume for them any other obligation. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Scag assumes no responsibility for incidental, consequential or other damages including, but not limited to, expense for gasoline, expense of delivering the mower to an Authorized Scag Service Dealer and expense of returning it to the owner, mechanic's travel time, telephone or telegram charges, rental of a like product during the time warranty repairs are being performed, travel, loss or damage to personal property, loss of revenue, loss of use of the mower, loss of time or inconvenience. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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DIVISION OF METALCRAFT OF MAYVILLE, INC.

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